



# User Manual

Version 1.0

© 2001 onyxmoon. All rights reserved.

This manual, as well as the software described in it, is furnished under license and may be used or copied only in accordance with the terms of such license. No part of this manual may be copied, reproduced, stored in a retrieval system, or distributed in any form or by any means, without the prior written permission of onyxmoon. The content of this documentation is subject to change without notice and should not be construed as a commitment by onyxmoon.

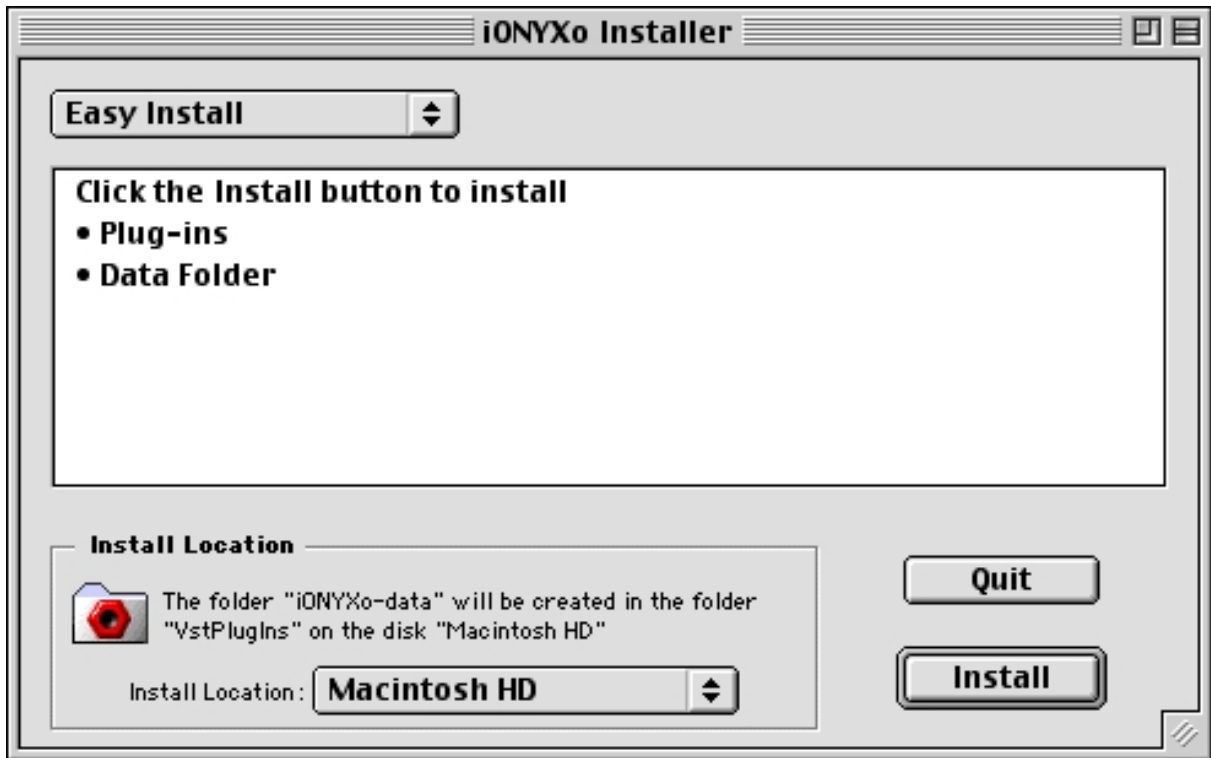
VST is a registered trademark of Steinberg Media Technologies AG. All other trademarks are the property of their respective owners.

# Contents

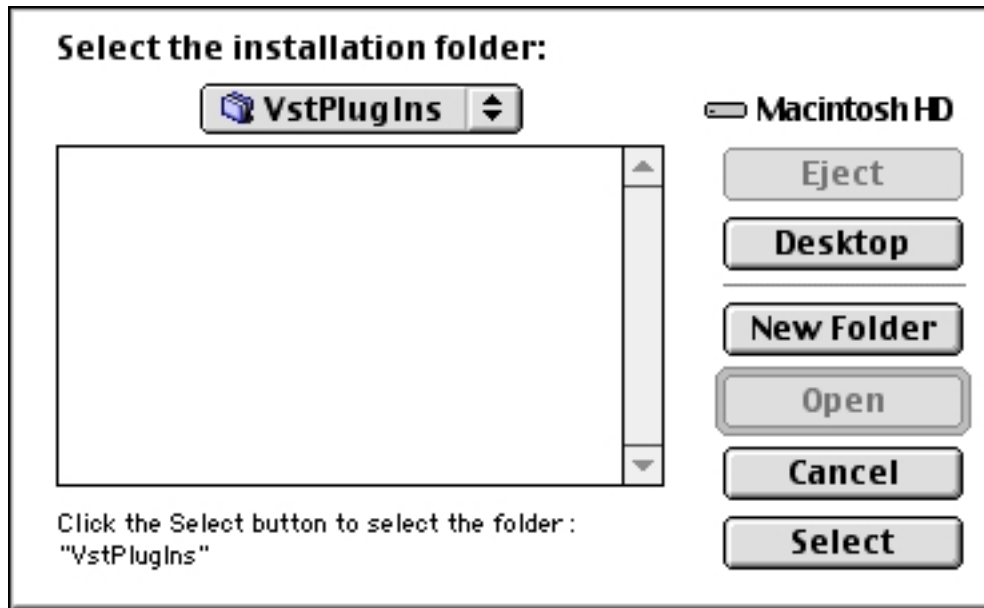
<b>1</b>	<b>Installation</b> .....	<b>4</b>
<b>2</b>	<b>Basic Issues</b> .....	<b>8</b>
2.1	Menu Section.....	9
2.2	Program Selection Section.....	9
2.3	Modul Selection Section.....	9
2.4	Module Parameter Section.....	10
2.5	Working with Parameters.....	11
2.6	Modulator Section.....	12
2.7	Modulated Parameters.....	13
2.8	State Section.....	14
<b>3</b>	<b>Working with Banks</b> .....	<b>15</b>
3.1	Loading a Bank.....	16
3.2	Saving a Bank.....	17
<b>4</b>	<b>Working with Programs</b> .....	<b>18</b>
4.1	Creating a new Program.....	19
4.2	Copying a Program.....	20
<b>5</b>	<b>Modulators</b> .....	<b>21</b>
5.1	Selecting Modulators.....	21
5.2	Sine Modulator.....	22
5.3	Linear Modulator.....	23
5.4	Cycloid Modulator.....	24
<b>6</b>	<b>Modules</b> .....	<b>25</b>
6.1	Mono/Mono Modules.....	25
6.1.1	Bypass.....	26
6.1.2	Delay.....	27
6.1.3	Multi Tap Echo.....	28
6.1.4	Ringmodulator.....	29
6.1.5	Polynomial Shaper.....	30
6.1.6	Filter.....	31
6.2	Mono/Stereo Modules.....	32
6.2.1	Split.....	32
6.2.2	Panner.....	33
6.2.3	Panning Delay.....	34
6.3	Stereo/Mono Modules.....	35
6.3.1	Adder.....	35
6.3.2	Crossfader.....	36
6.3.3	Mono Mixer.....	37
6.4	Multi/Mono Modules.....	38
6.4.1	Adder.....	38
6.4.2	Mono Mixer.....	38
<b>7</b>	<b>Automation</b> .....	<b>39</b>
7.1	Program Change.....	42
7.2	VST Tempo.....	42
7.3	Parameter Coupling.....	42
7.4	Side-Effects.....	42

# 1 Installation

1. After the download double-click on the icon of the installer.
2. Read the license agreement and click on "Accept", if you agree.
3. Now the "ReadMe" file is displayed. Read it, and after that click on "Continue".
4. In the following installation dialog click on the pop-up menu in the section "Install Location", and select "Select Folder".



5. A further dialog box will be then opened. If you are using several VST host applications, you can select a "VstPlugIns" folder by clicking on "VstPlugIns". Click on "Select" to confirm the selected folder.



6. Now you find yourself in the installation dialog again. Click on "Install" to carry on the installation.
7. Now enter the password you have received when buying the software and click on "Ok". After that, the following files will be installed into the already selected "VstPlugIns" folder:
- createcfg (program for creating a configuration file),
  - iONYXo Mono (plug-in with one input and one output),
  - iONYXo Send (plug-in with one input and two outputs),
  - iONYXo Stereo (plug-in with two inputs and two outputs) and
  - iONYXo-data (data folder containing all effect programs and topology files). In this folder also those effect programs created by you are saved. When using two or several VST host applications, the data folder should be installed only once, to be able to use the same effect programs with all VST hosts.

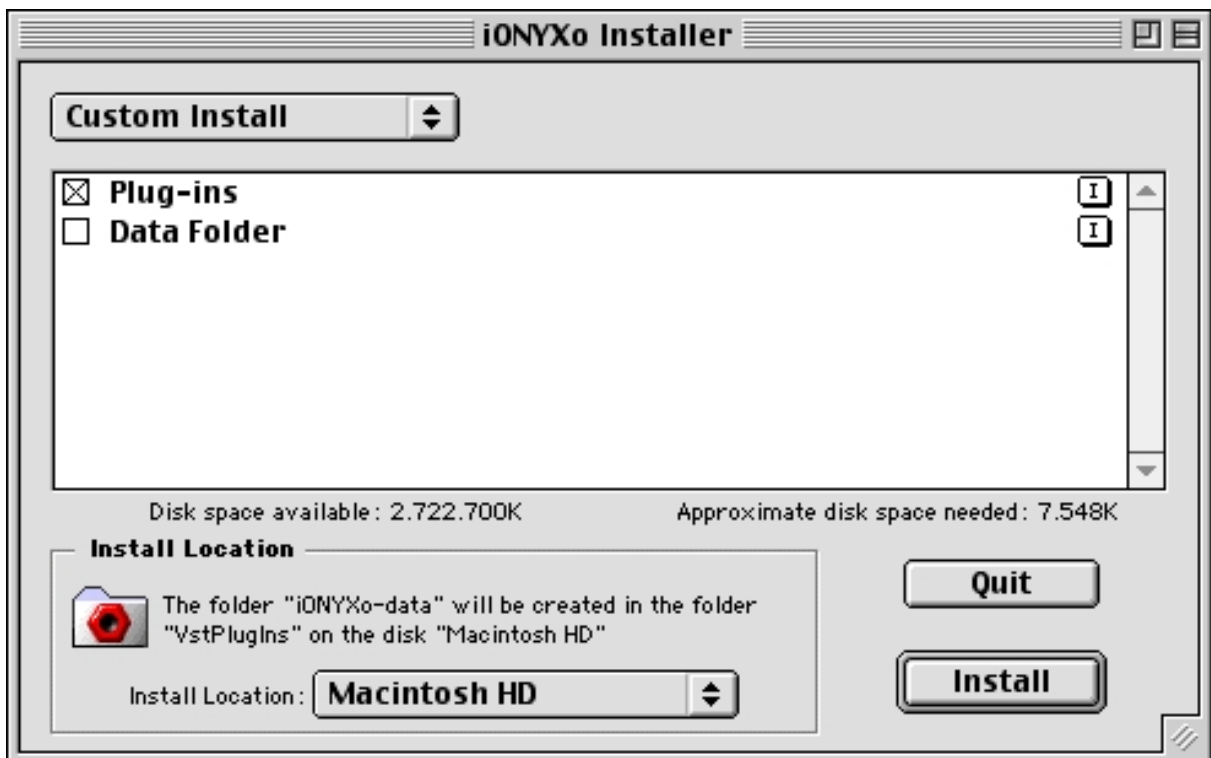
8. If you use only one VST host application or having carried out the already described steps for further VST hosts, the installation is finished for you. Click on "Quit" to quit the installer and continue with step 10.

If you want to use the plug-ins with further VST hosts, click on "Continue" and continue with step 9.



9. Now you are again in the installation dialog. Instead of "Easy Install" select the option "Custom Install".

Click on the box next to "Plug-ins". Thus all files except the data folder will be installed. Click on the pop-up menu in the section "Install Location" and select "Select Folder".



In the following repeat steps 5 to 8.

10. The following steps have to be carried out for all host applications, for which you want to use the plug-ins.

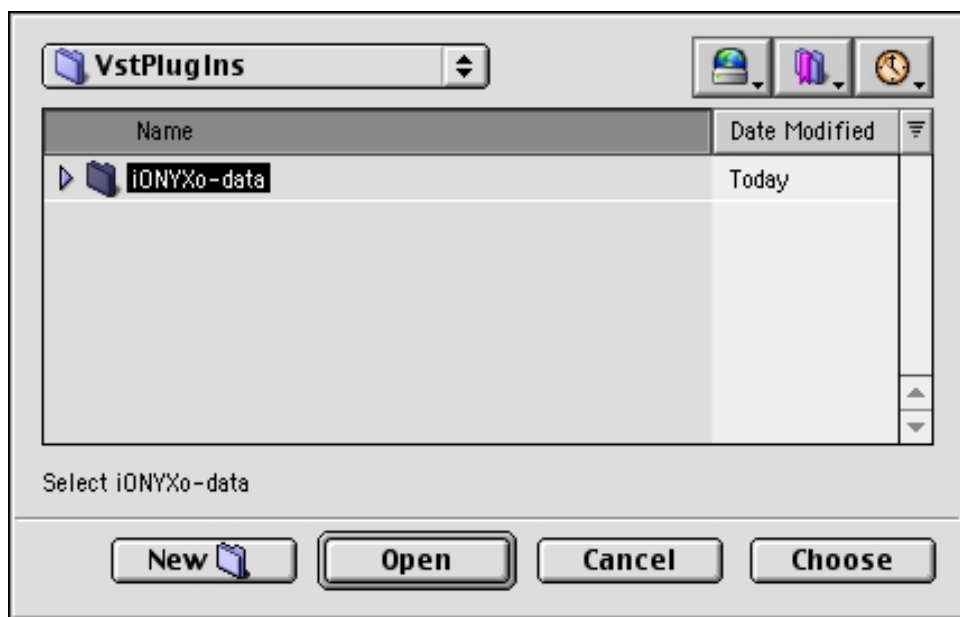
Check now, whether the plug-ins will find the data folder.

- For this start the VST host application.
- Open a song.
- Select one of the plug-ins “iONYXo Mono“, “iONYXo Send“ or “iONYXo Stereo“.
- Open the editor window of the plug-in.
- Click on “Load“ to load an effekt bank.
- If the error message “Path ... not found (error 2).“ is now displayed, carry out steps 11 to 13.

11. In the Finder open the folder “VstPlugIns“ of the relevant VST host application.

12. Double-click on “createcfg“.

13. In the following dialog box select the folder “VstPlugIns“, which contains the data folder “iONYXo-data“. Select “iONYXo-data“ and click then on “Choose“ to create the file “iONYXo.cfg“, which contains the access path on the data folder.



Check again, whether the data folder will be found (step 10).

## 2 Basic Issues

The editor windows of the plug-ins consist of four sections:

- menu (top),
- module selection or modulator (in the middle),
- program selection or module parameters (bottom) and
- state (right).



The middle and the lower sections are switchable. In the middle of the illustration the module selection is shown and at the bottom the program selection can be seen.



## 2.1 Menu Section



The buttons “Load“ und “Save“ can be used for loading a new bank or for saving a bank. In the input field below you can name the bank. For further details see chapter [Working with Banks](#).

In the middle of the menu section the two radion buttons “Module Sel. / Modulator“ and “Prog. Sel. / Module Par.“ will be found. With these the two main sections of the editor window can be switched.

On the very right in the menu section is the button “Edit Auto“. How you can assign controllers with it you can read in chapter [Automation](#).

## 2.2 Program Selection Section

Click on “Prog. Sel.“ to display the list of effect programs in the lower section of the editor window. By clicking on an item the relevant program will be selected.

You will find more about this issue in chapter [Working with Programs](#).

## 2.3 Modul Selection Section

Click on “Module Sel.“ in the menu section to display the topology of the selected program in the middle section of the editor window. The single modules are depicted as rectangles. The lines demonstrate the connections between the inputs and outputs. By clicking on one of the modules within the topology this one will be selected. Left of the topology you will find a list of the available modules. By clicking on one of these modules it will be copied to the selected position within the topology.

More about this you can read in chapter [Modules](#).

## 2.4 Module Parameter Section

Click on “Module Par.” in the menu section to display the parameters of the selected module in the lower section of the editor window.



In this example a delay module is selected.

## 2.5 Working with Parameters

There are two ways of setting parameters:

- **Using a knob:** Click on a knob and move the mouse with pressed mouse button in a circle. The value change can be seen in the corresponding input field. Now release the mouse button.
- **Input via the keyboard:** Click on an input field in order to select it. Enter the desired value and finish the input with the "="-character. As long as the background of the input field is depicted in blue you can enter values via the keyboard. The character "=" completes the input and the value will be set. **If a character is not accepted you have to de-activate the corresponding keyboard command in your host application.** If the entered value is outside of the valid range the minimum value or maximum value of the parameter will be set.

Each parameter of a module or modulator is a knob and at least one input field assigned to it. Often a parameter has two input fields to be able to set the parameter value in different ways. The value of the selected input field is depicted in yellow type. The position of the knob always corresponds to the selected input field.

With gain parameters for example, the values can be adjusted in decibel (dB) or in percent (%).



- This input field is selected, since the value is depicted in yellow type.
- Click on this input field to set the value in percent (%).
- With the knob you can set the gain value. The position of the knob applies to the selected input field (dB).

With time parameters the values can be set in milliseconds (ms) or as tempo in BPM (beats per minute). The tempo refers to the selected note value (e.g. quarter-note). A reduction in the note value also results in a smaller time value.



- Click on "+" or "-" to select a bigger or a smaller note value. Having reached the biggest note value possible, with the lowest value will be continued and vice versa.
- This input field is selected (yellow type). The position of the knob now refers to the time value in milliseconds (ms).
- By clicking on the input field you can set a tempo. The resulting time refers to the set note value.
- The position of the knob corresponds to the value of the selected input field.

Time values can be entered with sample accuracy. Therefore click on the input field below the label "Time/BPM". Now enter 10:3 via the keyboard, and complete the input with the "=" character. Now the value "10:03 ms" will be displayed in the input field. The set time is 10 milliseconds plus 3 samples.

If you want to enter a value in whole milliseconds, e.g. 3 milliseconds, it is sufficient to enter 3 instead of 3:0. For your information: in case of a sampling rate of 44.1 kHz, this value is displayed as “2:44 ms”. This corresponds to the most exact representation with sample accuracy.

## 2.6 Modulator Section

Click on “Modulator” in the menu section. In the middle part of the editor window the modulator section appears.

There are three modulator pairs available. These are described as “1XY”, “2XY” und “3XY”. Each modulator pair has a modulator type assigned to it. In the illustrated example the modulator pair “1XY” is assigned to the type “Sine-Lin”. That means modulator “1X” is a sine modulator, and modulator “1Y” is a linear modulator. For more information see chapter [Modulators](#).

The screenshot shows the 'Channel Effect 1 - iONYXo Send' interface. At the top, there are buttons for 'Load', 'Save', 'Module Sel.' (set to 'Modulator'), 'Edit Auto', 'Bank 1', and 'Prog. Sel.' (set to 'Module Par.').

The main section is divided into three modulator pairs:

- Mod Sel.:** Includes buttons for '1XY', '2XY', and '3XY'. Below it, 'Mod Type' options are 'Cycloid', 'Sine-Sine', 'Sine-Lin' (highlighted), and 'Lin-Lin'.
- Sine Modulator:** Features a speed control (0.5 Hz), a tempo control (120.00 BPM), and a phase control (0.0°). A sine wave graph is shown with a frequency scale from 0 to 360.
- Linear Modulator:** Features a speed control (1.0 Hz), a tempo control (60.00 BPM), a phase control (0.0°), and a ratio control (50.0%). A square wave graph is shown with a frequency scale from 0 to 360.

On the right side, there are 'Memory' indicators (LOW, ATTN, OK) and two vertical level meters for 'Input L R' and 'Output L R'.

The bottom section is labeled 'Delay D 1' and is organized into three columns: 'Direct Signal', 'Delayed Signal', and 'Feedback Signal'. Each column has a 'Positive' indicator, a 'Gain' control (0.0 dB, -∞ dB, -6.0 dB), a 'Time/BPM' control (0.00 ms, —, 124:44 ms), and a 'Mod. Depth' control (0.00 %). Below these are 'Mod. Source' controls (set to '1X') and 'Modulation' buttons.

## 2.7 Modulated Parameters

To modulate a parameter of a module the following steps are necessary:

- **Select modulation source:** Click on “+” or “-” of the button with the description “Mod. Source” situated below the knob of the parameter until the requested modulation source appears (e.g. “2Y”).
- **Turn on modulation:** Click on the button “Modulation”.
- **Set modulation depth:** Click on the input field “Mod. Depth”, and adjust the modulation depth with the knob, or enter a value via the keyboard. The modulation depth can be set in the range of 0 % (no modulation) up to 100 % (maximum modulation).



- This input field is selected.
- With the knob you can set the actual parameter value as well as the modulation depth. To set the modulation depth the input field “Mod. Depth” has to be selected.
- Click on this input field to select it.
- Click on “+” or “-” until the requested modulation source is selected.
- Click on this button to switch on the modulation.



- You can adjust the modulation depth with the knob, since the input field “Mod. Depth” is now selected.
- This input field displays the modulation depth. As the input field is depicted in blue, you can enter the values also via the keyboard.
- Modulation source “3Y” is selected.
- The modulation is activated. Click again on this button to turn off the modulation again.

## 2.8 State Section

The state section is always visible and contains no interactive elements.



**Bypass indicator:** This is only used in the demo version and lights up if the effect is being suppressed.

**Memory indicator:** If the green display ("OK") shows, there is still enough memory available. Yellow ("ATTN") indicates attention. If the red display ("LOW") lights up, there is acute lack of memory.

**Level meter for the left and (if available) the right input signal:** Clipping is being signaled by the uppermost, red field of the display.

**Level meter for the left and (if available) the right output signal:** Clipping is being signaled by the uppermost, red field in the display.

## 3 Working with Banks

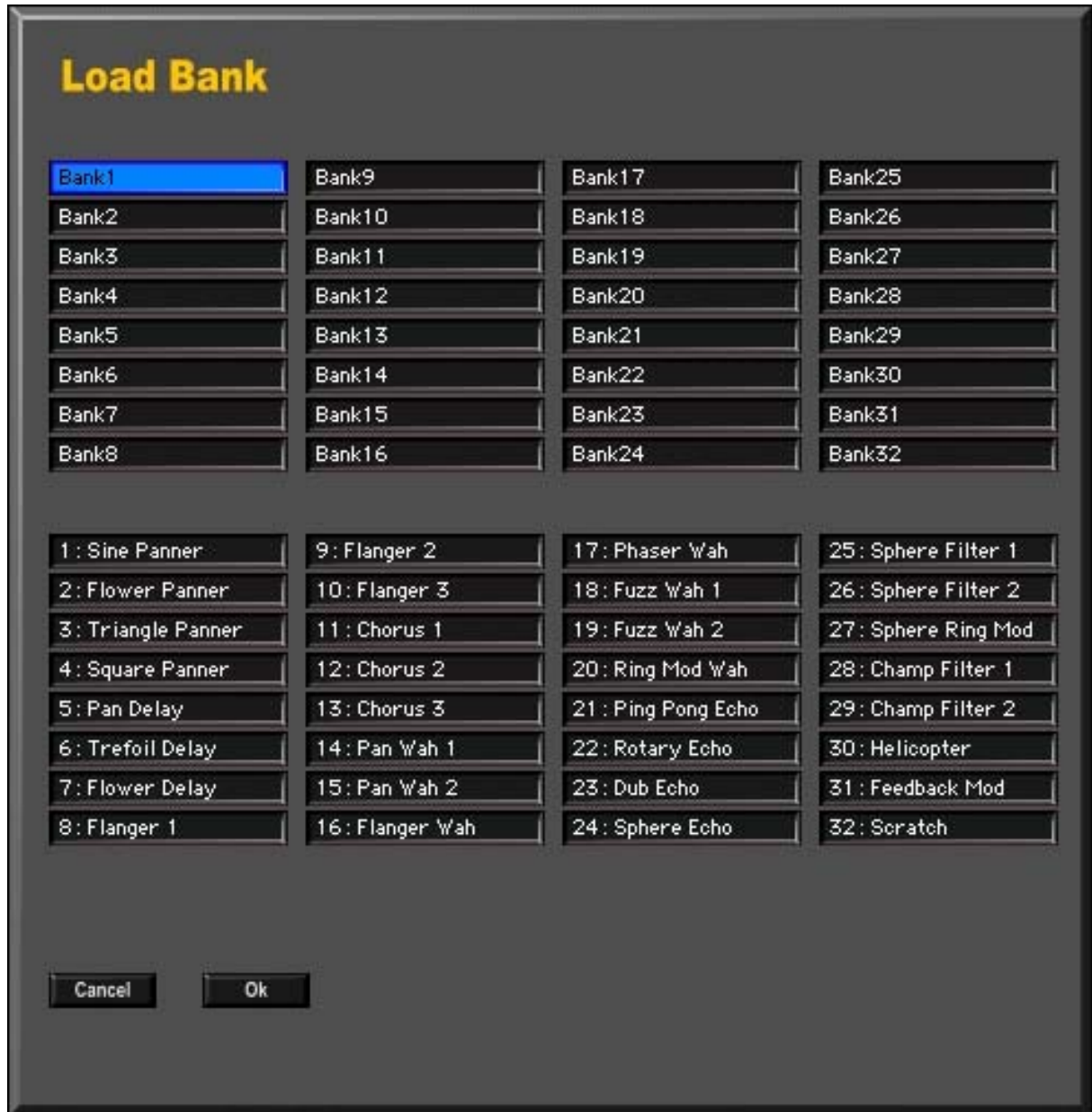
Each of the three plug-ins (“iONYXo Mono“, “iONYXo Send“ und “iONYXo Stereo“) can control 32 effect banks. A bank consists of 32 effect programs. A bank is always loaded or saved complete. The loading of separate programs is not possible.

**When saving the song with your VST host application, only a reference to the bank is saved in the song. If you have changed a program, you have to save the bank, before you quit the host application, otherwise the data will get lost.**

### 3.1 Loading a Bank

Click on “Load” in the menu section. Thus the dialog for loading a bank from the hard disk is displayed in the editor window.

In the upper part the list of the banks is shown. Click on one of the items to select a bank. In the lower part the programs of the selected bank are displayed.



Click on “Ok” to load the selected bank from the hard disk, or on “Cancel” to cancel the dialog.



## 3.2 Saving a Bank

Before saving a bank on the hard disk, you can name it. Click on the input field below “Save” in the menu section, and enter the new bank name. Don’t forget to complete the input with “=”. Click on “Save” to display the dialog for saving a bank.

In the upper part you see the list of the banks, in which the loaded bank is selected automatically. Below there is the list of the programs of this bank. The names correspond to the data being saved on the hard disk. So if you have changed the names of the bank or the names of the programs since the last saving process, they will not be displayed yet.



Click on “Ok” to save the bank on the hard disk, or on “Cancel” to cancel the dialog. If you want to copy the bank, select before another item than the pre-selected one in the bank list.

In the demo version the save feature is disabled.

## 4 Working with Programs

An effect program consists of a variable number of modules, whose inputs and outputs are connected with each other according to a fixed pattern, and six modulators. Such pattern is also referred to as topology.

The programs are organized in banks. All 32 programs of a bank are kept in the memory. Thus program changes in real time are possible. Program changes can be recorded and played back by the host application. For this the controller number 1 is being used. For more detailed information see chapter [Automation](#).

Click on “Prog. Sel.” in the menu section to make the program selection visible. Simultaneously the topology of the selected program is being displayed in the middle section of the editor window. If you want to select another program, just click on another entry of the program list.

The name of the chosen program is also displayed in the input field above the list. To change the name, click on the input field and enter a new name. By entering “=” the new program name is set in the list. Save the bank, if you want to save this change on the hard disk.

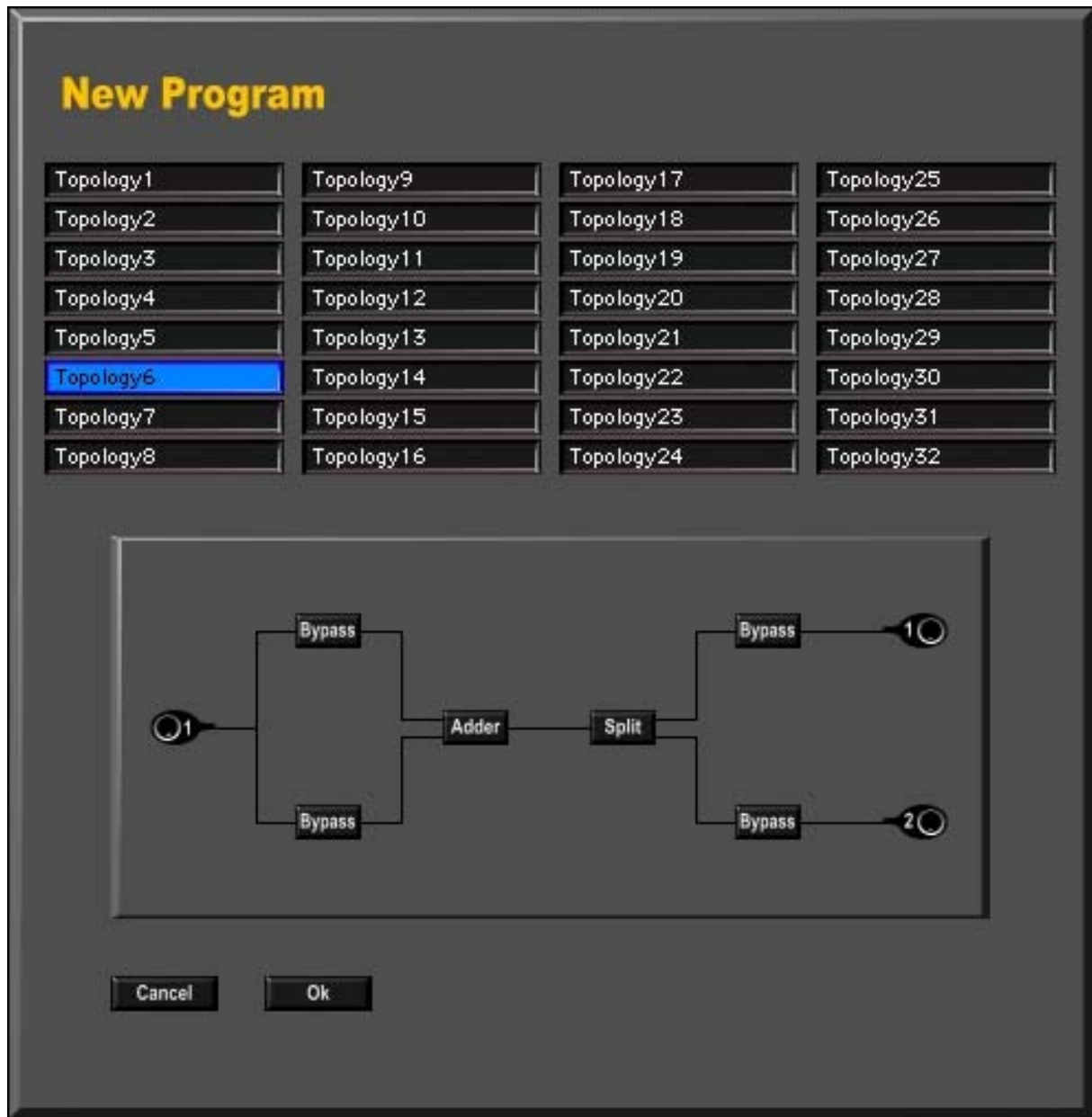


The buttons “New” und “Copy” are used for creating a new program or to copy a program.

In the demo version the copy feature is disabled.

## 4.1 Creating a new Program

For creating a new program, first select the program you want to overwrite, and then click on “New”. Thus the dialog for the selection of a topology will then be opened.



Click on one of the items in the list in order to select and display a topology.

Click on “Ok” to assign the new topology to the program, or on “Cancel” to cancel the dialog. The new topology will be displayed in the section modul selection. Please note, that the separate modules are set to “Bypass”, “Split” or “Adder”.

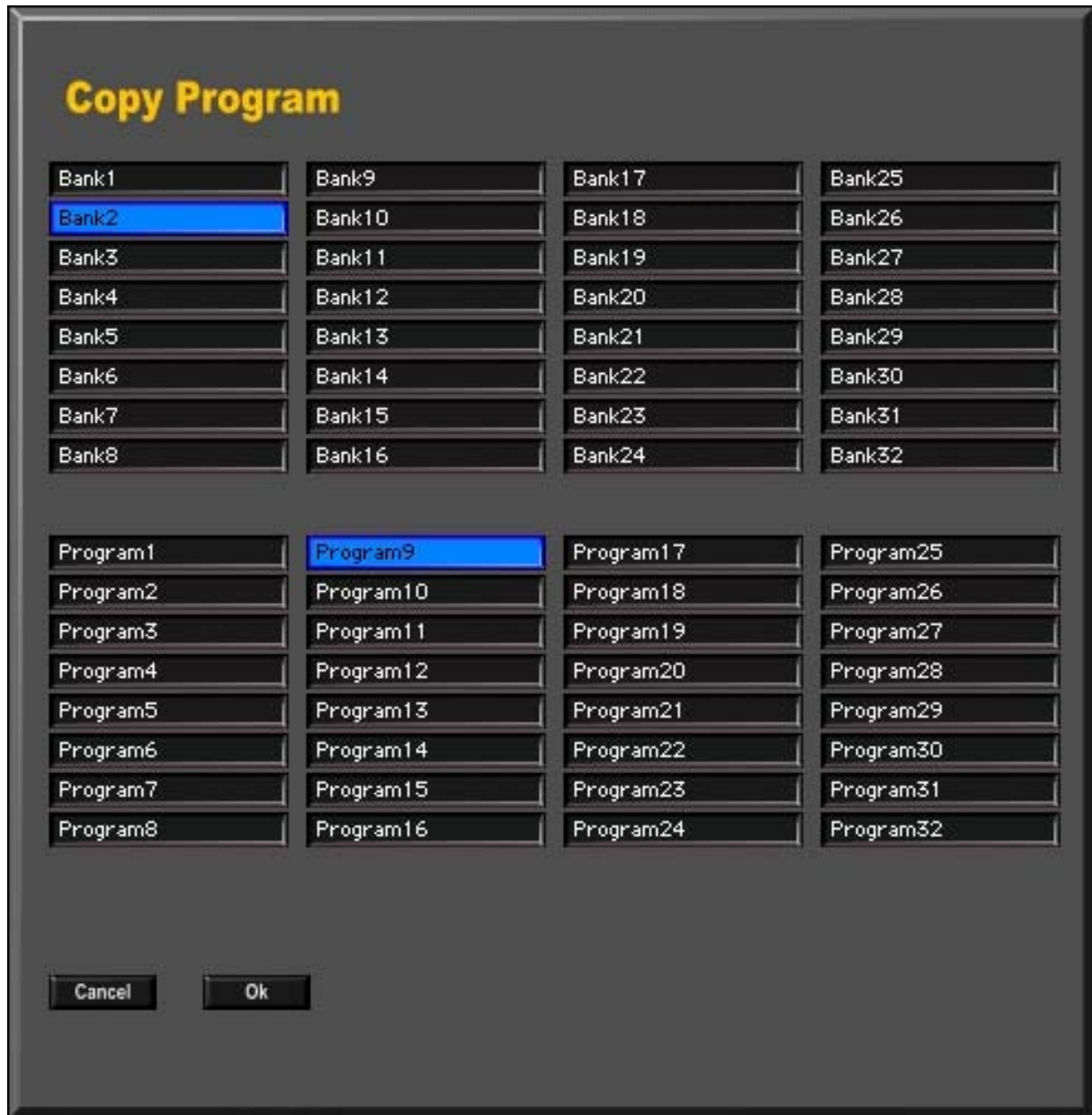
The parameter settings of the modulators will not be changed, if a new topology is assigned to a program.

If you want to save the new program on the hard disk, you have to save the bank.

## 4.2 Copying a Program

To copy a program within the loaded bank or into another bank, first select the program you want to copy, and click on “Copy”. Thus the dialog for selecting the destination program will be opened.

First select the bank, in which you want to copy the program. The loaded bank is the pre-selection in the list. Now choose the program you want to overwrite.



Click on “Ok”, if the copy process is to be carried out. Please note that the program is copied directly on the hard disk. That means:

- **The relevant program in this bank will be overwritten.**
- Any further saving of the bank is not necessary.

Click on “Cancel”, if you want to cancel the copy process.

## 5 Modulators

There are six modulation sources available, each of which can modulate as many module parameters as desired. Different modulator types can be assigned to the modulation sources:

- linear modulator,
- sine modulator and
- cycloid modulator.

As the cycloid modulator consists of two modulation sources the modulators are organized in pairs. The three modulator pairs are described with "1XY", "2XY" and "3XY". The six modulation sources therefore carry the descriptions "1X", "1Y", "2X", "2Y", "3X" and "3Y". The descriptions "X" and "Y" have been chosen to bear the two-dimensional character of the cycloid modulator in mind.

### 5.1 Selecting Modulators

Click on "Modulator" in the menu section to make the modulator section visible. In the left part of the modulator section there are two radio buttons with the descriptions "Mod Sel." and "Mod Type".



With the radio button "Mod Sel." you can select a modulator pair. In the illustrated example the modulator pair "1XY" is being selected.

With the radio button "Mod Type" you can set the type of the modulator pair. In the illustrated example the type "Sine-Lin" is assigned to the modulator pair "1XY". With modulation source "1X" you have a sine modulator, with the modulation source "1Y" you have a linear modulator. In the modulator section the relevant modulators are displayed. By switching the modulator type the parameter settings of the modulators will not be changed.

## 5.2 Sine Modulator

The sine modulator has two adjustable parameters:

- modulation frequency and
- phase.



The modulation frequency can be set either from 0.1 Hz to 20 kHz or as tempo – with regard to a note value – from 60 BPM to 600 BPM. By clicking on “+” or “-” the note value can be selected from a thirty-second note to a whole note. Switching between “Speed” and “Tempo” can be done by clicking on the relevant input field.

The phase is adjustable from 0° to 360° and is displayed in the diagram. A change of the phase causes the modulator to start again.

If the value of an input field is depicted in yellow type, the value can be adjusted by the knob below.

If you want to enter a value via the keyboard, click on the input field and enter the value. Finish the input with the “=” character to set the value.

For more detailed information on the use of parameters see chapter [Working with Parameters](#).

How to couple the modulation frequency with the tempo of the host program, is described in chapter [VST Tempo](#).

## 5.3 Linear Modulator

The linear modulator has three adjustable parameters:

- modulation frequency,
- phase and
- ratio.

With the radio button above the diagram the basic waveform – square or triangle – can be selected.



The modulation frequency can be set either from 0.1 Hz to 20 kHz or as tempo – with regard to a note value – from 60 BPM to 600 BPM. The note value can be selected from a thirty-second note to a whole note.

The phase is adjustable from 0° to 360° and will be displayed in the diagram. A change of the phase causes the modulator to start again.

The parameter ratio is adjustable from 0 % to 100 % and allows setting the pulse width of the square or the slope of the triangle. Thus e.g. also sawtooth waveforms are possible.

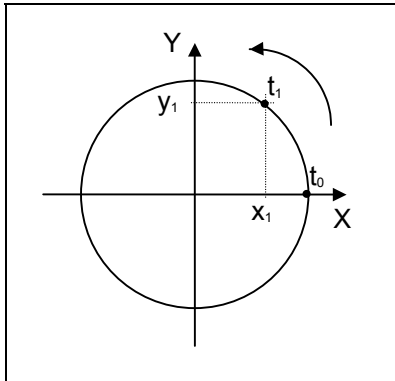
More detailed information on the use of parameters you will find in the chapter [Working with Parameters](#).

How to couple the modulation frequency with the tempo of the host program, you will find in chapter [VST Tempo](#).

## 5.4 Cycloid Modulator

Epicycloides describe the movement of a point on a circle, which rolls on the outside of a fixed circle. If the movable circle rolls on the inside of the fixed circle, the arising figure is called hypocycloid.

With the cycloid modulator you have a two-dimensional modulation as can be seen in the following graphic.



Let's assume, that we have the presetted cycloid – a circle. As the phase is set to  $0^\circ$ , the modulation starts at the time  $t_0$  and moves further anticlockwise.

The x-value is in accordance with modulation x and the y-value with modulation y.

Modulation x starts with the maximum value and reaches value  $x_1$  at the time  $t_1$ . The temporal sequence of these values corresponds to a cosine wave.

Modulation y is phase shifted  $90^\circ$  and corresponds to a sine wave.

The cycloid modulator has four adjustable parameters:

- modulation frequency,
- number of cycles (“Cycles“),
- phase and
- depth of the cycles (“Depth“).

With the radio button “Type“ you can choose between epicycloid and hypocycloid.

The setting “Right“ of the radio button “Direction“ causes a mirror image at the x-axis and therefore the reversal of the rotary direction.



The parameters modulation frequency and phase react the same as with the [Sine Modulator](#).

The number of cycles can be set with epicycloides from 0 to 16, with hypocycloides from 2 to 16.

The depth of the cycles is adjustable from 0 % to 100 %.



## 6 Modules

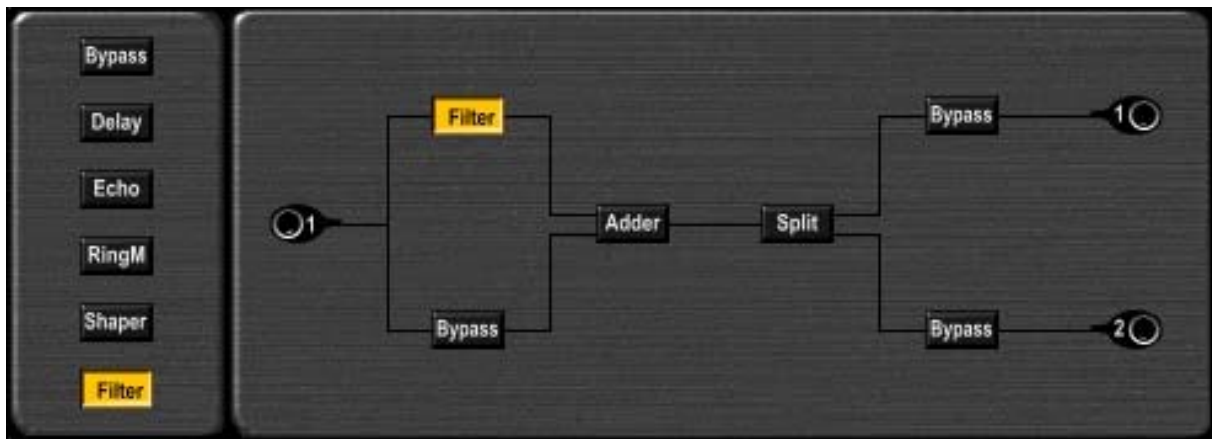
Click on “Module Sel.” in the menu section to make the module selection visible. The section of the module selection consists of two parts. In the right part the topology is displayed.

Select a module of the topology by clicking on it. Dependent on the type of this selected module the list of the available modules will be displayed on the left side. By clicking on an item the relevant module will be set in the topology. You can switch the modules as much as you like without losing any parameter settings.

There are four types of modules:

- mono/mono modules,
- mono/stereo modules,
- stereo/mono modules and
- multi/mono modules.

### 6.1 Mono/Mono Modules



Mono/mono modules have one input and one output. The following modules of this type are available:

- bypass,
- delay,
- multi tap echo (“Echo“),
- ringmodulator (“RingM“),
- polynomial shaper (“Shaper“) and
- filter.

### 6.1.1 Bypass

The bypass module passes on the signal at the input to the output without the signal being changed.



As this module has no parameter, only the logo is being displayed in the module parameter section.

## 6.1.2 Delay

The delay module shows three signal paths:

- direct signal (“Direct Signal”),
- delayed signal (“Delayed Signal”) and
- feedback signal (“Feedback Signal”).

All signal paths have a gain parameter, which is alternatively adjustable in a range from  $-\infty$  dB (decibel) to 0 dB or from 0 % to 100 %. By clicking on a button with the description “Positive” the relevant signal will be inverted. This is shown by the change to “Negative”. By clicking on the button again the inversion will be de-activated.

The time values of the delayed signal and the feedback signal are either adjustable directly from 0 ms (milliseconds) to 1000 ms or as tempo – with regard to a note value – from 60 BPM (beats per minute) to 600 BPM. The note value can be selected from a thirty-second note to a quarter-note. Click on “+” or “-” until the requested value is reached.



You can modulate all gain parameters and time parameters – therefore they have an additional parameter “Mod. Depth”, with which the modulation depth can be adjusted from 0 % to 100 %.

The control elements of the five parameters are arranged vertically. By using the knobs you can change the values of the activated input fields. You will recognize the activated input fields by the yellow type. To activate another of the vertically arranged input fields, just click on it. In the input field having been selected last you can enter values also via the keyboard. In the following enter the character “=” to set the value.

For more detailed information on the use of parameters see the chapters [Working with Parameters](#) and [Modulated Parameters](#).

### 6.1.3 Multi Tap Echo

The multi tap echo has sixteen taps; please note, tap 1 corresponds to the direct signal and the even taps (tap 2, tap 4, etc.) are inverse. The taps are displayed in the diagram situated in the upper part of the module parameter section.

The maximum delay time is 4 seconds. The temporal scaling of the diagram will be adapted automatically to the last tap.

There are sixteen luminous buttons below the diagram, with which you can switch on or off the taps separately. By clicking on one of these buttons the corresponding tap will be turned off. After clicking on it again, the tap will be activated again.



The taps are not separately adjustable, but will be changed by four parameters. Modulating the parameters is not possible. The parameters can be adjusted by a knob each or by the input fields arranged left of them.

With the parameter “Gain max” the gain values of all taps are changed; please note, the adjusted value – dependent on “Gain Slope” – refers to tap 1 or tap 16. The parameter can be set either from  $-\infty$  dB to 0 dB or from 0 % to 100 %.

The parameter “Gain Slope” determines the envelope of the taps and is adjustable from -1 to +1. With a value of 0 all taps have the same gain value. Negative values being set the taps fade away exponentially. Positive values mean an exponentially rising envelope.

The parameter “Distance max” refers – dependent on “Distance Slope” – to the temporal distance between tap 1 and tap 2 or tap 15 and tap 16. The time value can be set directly from 0 ms to 4000 ms or as tempo – with regard to a note value – from 60 BPM to 600 BPM. Since the maximum delay time possible is 4 seconds, also the note values half-note and whole note are available.

On the very right is the parameter “Distance Slope”. With it you can reduce the distances between the taps. Value 0 means, that all taps have the same distance. With negative values the density increases exponentially, and vice versa the distance increases with positive values.

For more detailed information on the use of parameters see chapter [Working with Parameters](#).

## 6.1.4 Ringmodulator

The ringmodulator has two parameters (“Gain” and “Speed”), which can be modulated.

The gain parameter is adjustable either from  $-\infty$  to 0 dB or from 0 % to 100 %.

With the speed parameter the frequency of the ringmodulation can be set from 0.1 Hz to 20 kHz.

Information on the use of parameters you will find in the chapters [Working with Parameters](#) and [Modulated Parameters](#).

With the radio button “Type” above the diagram you can select between the waveforms square and triangle.

The parameter “Ratio” is adjustable from 0 % to 100 % and serves for setting the pulse width of the square or the slope of the triangle. The resulting waveform is displayed in the diagram.



## 6.1.5 Polynomial Shaper

With the polynomial shaper you can bend the dynamics characteristic line. In particular nonlinear distortion becomes possible with it.

Right in the module parameter section the resulting characteristics line is being displayed in a diagram. Please note, that the horizontal axis corresponds to the input signal and the vertical axis to the output signal.

The gain parameter is adjustable from  $-\infty$  dB to +6 dB or from 0 % to 200 %. Thus an overdrive effect can be created, since the output signal is limited to 0 dB.

The parameters "Cubic", "Square", "Linear" and "Offset" can be set from -10 to +10. The thus created dynamics characteristic line is described by the following formula:

$$y = \text{cubic} \cdot x^3 + \text{square} \cdot x^2 + \text{linear} \cdot x + \text{offset}$$

Here "x" corresponds to the input signal and "y" to the output signal.



All parameters can be modulated. For further information on the use of parameters please see the chapters [Working with Parameters](#) and [Modulated Parameters](#).

## 6.1.6 Filter

The filter module offers five filter types:

- low-pass,
- high-pass,
- low shelving,
- high shelving and
- peak.

These are filters of 2nd-order, which means that the slope rate of the low- and high-pass filter is 12 dB / octave.

With the radio button “Type“ above the diagram the filter type can be selected.

In the diagram the frequency response of the filter is displayed in logarithmic form.

The gain parameter is adjustable from -18 dB to +18 dB and is being used with the filter types low shelving, high shelving and peak. With the low-pass and high-pass this parameter is without function.

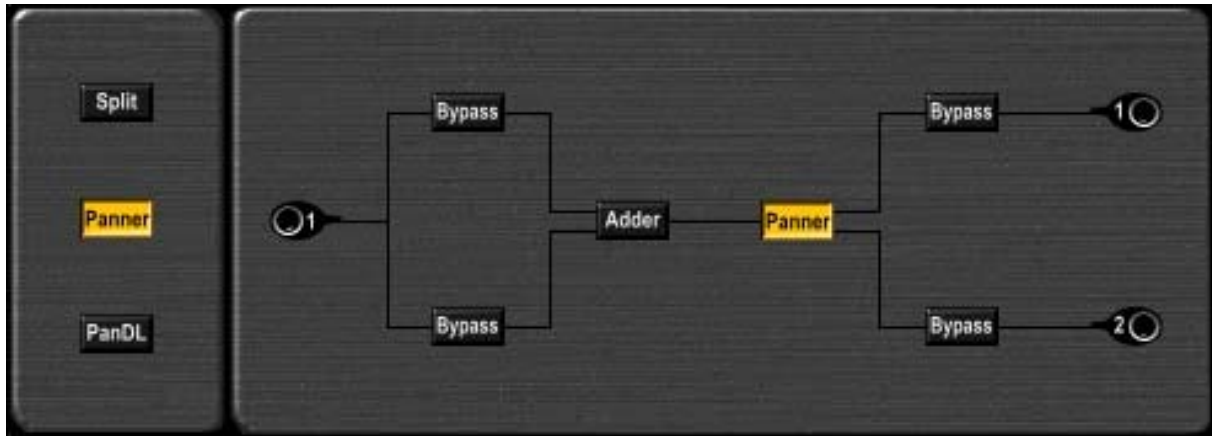
The cutoff frequency or centre frequency (of peak filter) is adjustable with the parameter “Frequency“ from 16 Hz to 16 kHz.

The quality parameter is only being used with the peak filter and can be set from 0.5 to 100. Thus the bandwidth of the filter can be varied.



The three parameters can be modulated. For more detailed information on the use of parameters see the chapters [Working with Parameters](#) and [Modulated Parameters](#).

## 6.2 Mono/Stereo Modules



Mono/stereo modules have one input and two outputs. The following modules of this type are available:

- split,
- panner and
- panning delay (“PanDL“).

### 6.2.1 Split

The split module divides the input signal into both outputs. The sum of the output levels corresponds to the input level.

As with the bypass module, there are no parameters. Therefore the logo is being shown in the module parameter section.



## 6.2.2 Panner

The panner module has two parameters, which can be modulated.

The gain parameter is adjustable from  $-\infty$  dB to 0 dB or from 0 % to 100 %.

With the pan parameter the split of the input signal into the left and the right output channel is adjustable. In the two input fields above the knob the share of the left and right output signal is displayed in percent. The separated input fields for the left and right share may perhaps appear superfluous, but are indeed of good use regarding automation. More about this you will find in the chapter [Parameter Coupling](#).



For more detailed information on the use of parameters see the chapters [Working with Parameters](#) and [Modulated Parameters](#).

### 6.2.3 Panning Delay

The module panning delay has – like the delay module – three signal paths:

- direct signal (“Direct Signal”),
- delayed signal (“Delayed Signal”) and
- feedback signal (“Feedback Signal”).

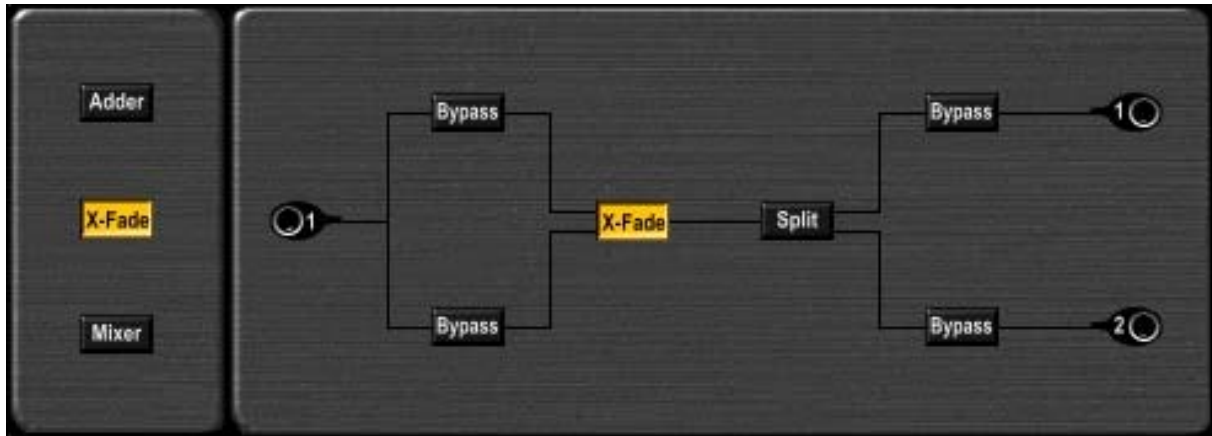
The relevant gain parameters and time parameters work the same as with the delay module.

As the panning delay has two outputs, there is an additional panorama parameter for each signal path. With these you can divide the relevant signals into the left and right channel. The panorama parameters correspond to the pan parameter of the panner module.



All parameter can be modulated. Further information you will find in the chapters [Working with Parameters](#), [Modulated Parameters](#), [Delay](#) and [Panner](#).

## 6.3 Stereo/Mono Modules



Stereo/mono modules have two inputs and one output. The following modules of this type are available:

- adder,
- crossfader ("X-Fade") and
- mono mixer ("Mixer").

### 6.3.1 Adder

The adder module mixes both input signals in the same ratio. The output level corresponds to the average value of the input levels.

As there are no parameters, the logo is being shown in the module parameter section.

### 6.3.2 Crossfader

The crossfader module allows fading between the left and the right input signal.

The gain parameter is adjustable from  $-\infty$  dB to 0 dB or from 0 % to 100 %.

The parameter “X-fade” determines the ratio of the left and the right input signal at the output signal. The handling corresponds to the pan parameter of the panner module.



Both parameters can be modulated. Further information you will find in the chapters [Working with Parameters](#), [Modulated Parameters](#) and [Panner](#).

### 6.3.3 Mono Mixer

The mono mixer module has eight possible input channels, which are mixed to one output signal. The control elements of each channel are arranged vertically.

The share of an input signal at the output signal can be adjusted by the relevant slider. For this click on the yellow button of the slider and move the mouse with pressed mouse button up or down in order to change its position. The gain values are adjustable from  $-\infty$  dB to 0 dB or from 0 % to 100 %.

If you want to invert an input signal, click on the relevant button with the inscription "Positive". The button will be illuminated and "Negative" will be displayed. Clicking on the button again will turn off the inversion.

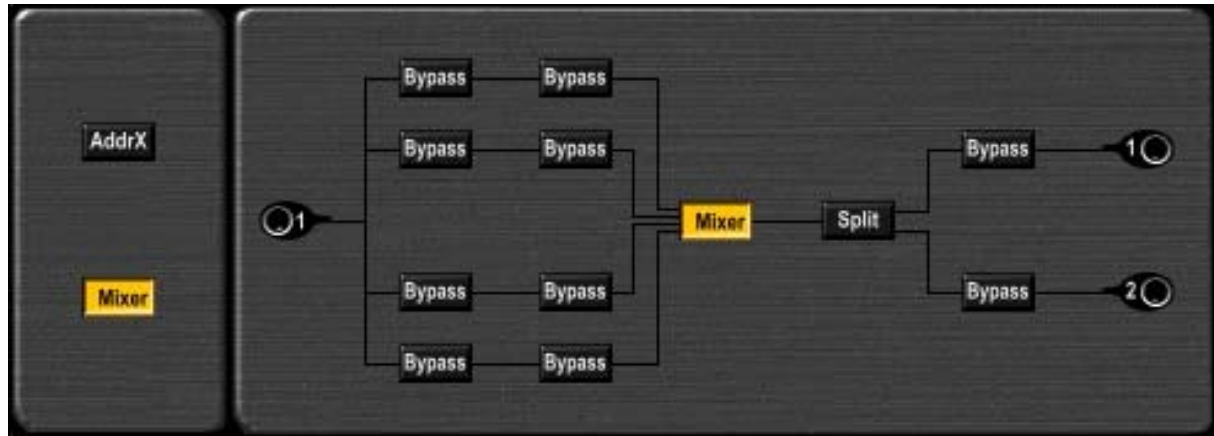


Click on "Mute" to mute the relevant channel. The button will be displayed as illuminated. If you click on the button one more time, the channel will be activated again.

As you have a stereo/mono module, which means there are only two inputs available, the channels 3 to 8 are not being used. Therefore these ones are muted automatically.

For more detailed information on the use of parameters see chapter [Working with Parameters](#).

## 6.4 Multi/Mono Modules



Multi/mono modules have three to eight inputs and one output. The following modules of this type are available:

- adder and
- mono mixer ("Mixer").

In the illustrated example you have four inputs.

### 6.4.1 Adder

The adder module mixes the available input signals in the same ratio to one output signal. The resulting output level corresponds to the average value of the input levels.

As this module has no parameters, the logo is displayed in the module parameter section.

### 6.4.2 Mono Mixer

Information on the operation of the mono mixer you will find in the sub-chapter [Mono Mixer](#) of the chapter [Stereo/Mono Modules](#).

The only difference is the number of available channels. Since in the depicted example four input channels are being used, the channels 5 to 8 are unchangeably muted in this case.

## 7 Automation

VST host applications have a limited number of controllers, with which plug-in parameters can be automated. With effect programs having many parameters there will not be available a separate controller for each plug-in parameter.

To still enable the automation of some plug-in parameters, the available controllers can be assigned to them. Click on "Edit Auto" in the menu section. Instead of the parameter values now the assigned controllers are displayed in the input fields. If there "Auto off" is shown in an input field, this means, that there is no controller assigned.



There are different types of controllers defined. The differentiation results according to the unit of the input field, as the following table shows.

Parameter type	Unit
Gain	dB (decibel)
Relative	% (percent)
Time	ms (milliseconds)
Frequency	Hz (hertz)
Tempo	BPM (beats per minute)
Phase	° (degree)
Absolute	--- (without unit)

For most types of parameters there are several controllers available. The maximum number of controllers depends – as already mentioned – on the possibilities of the host application. Let's assume, that the host provides 16 controllers. Then e.g. three controllers will be used for the parameter type "Gain", these are "Gain 1", "Gain 2" and "Gain 3".

Each controller can be assigned to as many plug-in parameters of the relevant type as desired. In the example shown, the controller "Gain 1" is assigned to the gain parameters of "Direct Signal" and "Delayed Signal" within the module "Panning Delay". This means, that these parameters are being automated together and have always the same parameter value.

The following tables show a summary of the available controllers.

Host with 16 controllers per plug-in				
Parameter type	Unit	Number	Index	Name
Program	---	1	1	"Program"
Gain	dB	3	2 ... 4	"Gain 1" ... "Gain 3"
Relative	%	3	5 ... 7	"Rel. 1" ... "Rel. 3"
Time	ms	2	8, 9	"Time 1", "Time 2"
Frequency	Hz	2	10, 11	"Freq. 1", "Freq. 2"
Tempo	BPM	1	12	"Tempo 1"
Phase	°	2	13, 14	"Phase 1", "Phase 2"
Absolute	---	2	15, 16	"Abs. 1", "Abs. 2"

Host with 32 controllers per plug-in				
Parameter type	Unit	Number	Index	Name
Program	---	1	1	"Program"
Gain	dB	5	2 ... 6	"Gain 1" ... "Gain 5"
Relative	%	5	7 ... 11	"Rel. 1" ... "Rel. 5"
Time	ms	5	12 ... 16	"Time 1" ... "Time 5"
Frequency	Hz	5	17 ... 21	"Freq. 1" ... "Freq. 5"
Tempo	BPM	1	22	"Tempo 1"
Phase	°	5	23 ... 27	"Phase 1" ... "Phase 5"
Absolute	---	5	28 ... 32	"Abs. 1" ... "Abs. 5"



Host with at least 64* controllers per plug-in				
Parameter type	Unit	Number	Index	Name
Program	---	1	1	"Program"
Gain	dB	10	2 ... 11	"Gain 1" ... "Gain 10"
Relative	%	10	12 ... 21	"Rel. 1" ... "Rel. 10"
Time	ms	10	22 ... 31	"Time 1" ... "Time 10"
Frequency	Hz	10	32 ... 41	"Freq. 1" ... "Freq. 10"
Tempo	BPM	1	42	"Tempo 1"
Phase	°	10	43 ... 52	"Phase 1" ... "Phase 10"
Absolute	---	10	53 ... 62	"Abs. 1" ... "Abs. 10"

\*Note: There are being used only 62 controllers.

To enable the automation of a plug-in parameter you have to click on the relevant input field and enter a numerical value via the keyboard. After having finished the input with "=", the name of the controller will be displayed in the input field.

If you enter for example 3= in a gain input field, the controller "Gain 3" will be assigned to it. If a numerical value is entered beyond the permitted range, no controller can be assigned to it. In this case, "Auto off" will be displayed in the input field. By the input 0= the automation of the parameter will be turned off, which means no controller will be assigned to it.

## 7.1 Program Change

The first controller available is reserved for program change. When recording the automation, program changes are also taken into account. With playback the relevant program changes will take place.

## 7.2 VST Tempo

You can couple tempo parameters to the tempo of your host. This possibility is independent from the number of the controllers and therefore not shown in the tables. However, this feature is only available if the host supports VST tempo.

Tempo coupling is possible with all those parameters that are adjustable – with regard to a note value – as tempo. These are time parameters of modules and speed parameters of modulators.

Click on “Edit Auto” in the menu section in order to enable assigning of controllers. Click now on the desired tempo input field and enter  $t=$ . “Vst-Tempo” turns up in the input field. Click again on “Edit Auto”. This parameter now follows all tempo changes in the host application.

## 7.3 Parameter Coupling

Since a controller can be assigned to as many plug-in parameters of the same type as desired, you can couple several plug-in parameters.

Panorama parameters have two separate input fields for the right and the left share. Thus different panorama parameters can be coupled in reverse direction.

In the example shown two panorama parameters are automated with “Rel. 1” within the module “Panning Delay”. With “Direct Signal” it is the left, with “Delayed Signal” the right share. If one of the panorama knobs is turned to the left, the other one turns to the right.

In this way also panorama parameters of different modules can be coupled inverse.

## 7.4 Side-Effects

The ranges differ partly, when having different parameters of the same type. This might possibly lead to unintentioned settings, if the same controller has been assigned to these plug-in parameters.

Let's assume, the gain parameters of a ringmodulator (range  $-\infty$  dB to 0 dB) and of a polynomial shaper (range  $-\infty$  dB to 6 dB) are automated with “Gain 1”. If the gain value 0 dB is now adjusted in the ringmodulator, the value in the polynomial shaper also changes to the maximum, which is 6 dB.

A further unwelcome side-effect can arise, if the same controllers are used in several effect programs. When changing programs the values of the relevant plug-in parameters adjust to the values of the previous effect program.