

**USER MANUAL**

**\_EFX REFRACT**

**ARTURIA**

**\_The sound explorers**

# Special Thanks

---

## DIRECTION

---

Frédéric Brun

---

## PROJECT MANAGEMENT

---

Kevin Arcas

Samuel Limier

---

## PRODUCT MANAGEMENT

---

Cédric Coudyser (lead)

Clément Bastiat

---

## DIGITAL SIGNAL PROCESSING

---

Geoffrey Gormond (lead)

**DSP libraries:**

Hugo Caracalla

Geoffrey Gormond

Samuel Limier (lead)

Andrea Coppola

Rasmus Kürstein

Marc Antigny

Mauro De Bari

Marius Lasfargue

Kevin Arcas

Alessandro De Cecco

Fanny Roche

Yann Bourdin

Loris De Marco

---

## SOFTWARE

---

Gonçalo Bernardo (lead)

**SW libraries:**

Gonçalo Bernardo

Christophe Luong

Raynald Dantigny

Pierre-Lin Laneyrie (lead)

Yann Burrer

Pierre Mazurier

Patrick Perea

Alexandre Adam

Corentin Comte

Fabien Meyrat

Stéphane Albanese

Raynald Dantigny

Mathieu Nocenti

Pauline Alexandre

Samuel Lemaire

Marie Pauli

Baptiste Aubry

Cyril Lépinette

Patrick Perea

---

## GRAPHIC DESIGN

---

Maxence Berthiot

Paul Erdmann

Raynald Dantigny

Morgan Perrier

---

## SOUND DESIGN

---

Florian Marin (lead)

Quentin Feuillard

Nix Nixon

Gonçalo Bernardo

Lily Jordy

Cubic Spline

---

## QUALITY ASSURANCE

---

Nicolas Naudin (lead)

Matthieu Bosshardt

Roger Schumann

Félix Roux

Arthur Peytard

Bastien Hervieux

Adrien Soyser

Germain Marzin

Aurélien Mortha

Nicolas Stermann

Arnaud Barbier

Rémi Pelet

Enrique Vela

---

## MANUAL

---

Sven Bornemark

Jimmy Michon

---

## IN-APP TUTORIAL

---

Gustavo Bravetti

---

## BETA TESTING

---

David Birdwell	Jay Janssen	Andrew Macaulay	Richard Courtel
Raphaël Cuevas	Terry Marsden	Bastiaan Barth (Solidtrax)	
Adrian Dybowski	Ivar	Matthew Herbert	
Kirke Godfrey	Gary Morgan	Marco Correira	

© ARTURIA SA - 2023 - All rights reserved.  
26 avenue Jean Kuntzmann  
38330 Montbonnot-Saint-Martin  
FRANCE  
[www.arturia.com](http://www.arturia.com)

Information contained in this manual is subject to change without notice and does not represent a commitment on the part of Arturia. The software described in this manual is provided under the terms of a license agreement or non-disclosure agreement. The software license agreement specifies the terms and conditions for its lawful use. No part of this manual may be reproduced or transmitted in any form or by any purpose other than purchaser's personal use, without the express written permission of ARTURIA S.A.

All other products, logos or company names quoted in this manual are trademarks or registered trademarks of their respective owners.

**Product version: 1.0.0**

***Revision date: 21 December 2023***

## Special Messages

This manual covers how to use Efx REFRACT, provides a comprehensive look at its features, and details how to download and activate it. First, some important messages:

### Specifications Subject to Change:

The information contained in this manual is correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications or features without notice or obligation.

### IMPORTANT:

The software, when used 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 volume or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in your ears, please consult an audiologist.

### NOTICE:

Service charges incurred due to lack of knowledge relating to how a function or a feature works (when the software 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 additional support.

### EPILEPSY WARNING – Please Read Before Using Efx REFRACT

Some people are susceptible to epileptic seizures or loss of consciousness when exposed to certain flashing lights or light patterns in everyday life. This may happen even if the person has no medical history of epilepsy or has never had any epileptic seizures. If you or anyone in your family has ever had symptoms related to epilepsy (seizures or loss of consciousness) when exposed to flashing lights, consult your doctor prior to using this software.

Discontinue use and consult your doctor *immediately* if you experience any of the following symptoms while using this software: dizziness, blurred vision, eye or muscle twitches, loss of consciousness, disorientation, or any involuntary movement or convulsion.

## Precautions to Take During Use

- Do not stand too close to the screen.
- Sit a good distance away from the screen.
- Avoid using if you are tired or have not had much sleep.
- Make sure that the room is well lit.
- Rest for at least 10 to 15 minutes per hour of use.

## **Congratulations on your purchase of Efx REFRACT!**

Excellence is placed at the heart of every Arturia product, and Efx REFRACT is no exception. We are thrilled to bring you this mind-blowing toolbox of audio effects, each one designed to move with your music in fascinating ways. Explore the presets, tweak a few controls, get lost in the features - dive as deeply as you like.

Be sure to visit the [www.arturia.com](http://www.arturia.com) website for information on all our other inspiring hardware and software instruments, effects, MIDI controllers, and more. They have become indispensable tools for many visionary artists around the globe.

Musically yours,

**The Arturia team**

# Table Of Contents

1. Welcome to Efx REFRACT!.....	3
1.1. So what does Efx REFRACT do?.....	3
1.2. Efx REFRACT Features Summary .....	4
2. Activation and Setup.....	5
2.1. Compatibility .....	5
2.2. Download and Install.....	5
2.2.1. Arturia Software Center.....	5
2.3. Working with Efx REFRACT.....	6
2.4. Audio Settings for Efx REFRACT.....	6
3. Interface Overview.....	7
3.1. Standard control behaviors.....	8
4. Toolbars .....	9
4.1. Insert Effect or Send Effect?.....	9
4.1.1. As an Insert Effect.....	9
4.1.2. As a Send Effect.....	9
4.2. Upper Toolbar .....	10
4.2.1. New Preset.....	10
4.2.2. Save Preset .....	10
4.2.3. Save Preset As .....	10
4.2.4. Import.....	11
4.2.5. Export .....	11
4.2.6. Resize Window .....	12
4.2.7. Tutorials.....	13
4.2.8. Help.....	13
4.2.9. About.....	13
4.2.10. Selecting Presets.....	14
4.3. The Preset Browser.....	15
4.4. Searching Presets .....	16
4.4.1. Using Tags as a Filter.....	16
4.5. The Results Pane .....	18
4.5.1. Sorting Presets.....	19
4.5.2. Liking Presets .....	19
4.5.3. Featured factory Presets.....	19
4.5.4. Shuffle Button.....	20
4.6. Preset Info Section.....	20
4.6.1. Preset Info Quick Menu.....	21
4.6.2. Dual Settings and Copy.....	22
4.7. Lower Toolbar .....	22
4.7.1. Control Descriptions.....	22
4.7.2. Utility Functions.....	22
4.7.3. Undo, Redo, and History .....	23
4.7.4. CPU Meter.....	24
4.7.5. Resize Handle and Max View .....	24
5. Using Efx REFRACT.....	25
5.1. Input Level Control .....	25
5.2. Refraction .....	26
5.2.1. Amount.....	26
5.2.2. Voices.....	26
5.3. Mode Effect Type .....	27
5.3.1. Type 1: Bandpass .....	27
5.3.2. Type 2: Comb Filter .....	28
5.3.3. Type 3: Bitcrusher.....	29
5.3.4. Type 4: Distortion.....	30
5.3.5. Type 5: Harmonizer .....	31
5.4. Output Level Control.....	33
5.5. Filters .....	33
5.5.1. HP Input .....	33
5.5.2. LP Output.....	34
5.6. LFO.....	34
5.6.1. LFO Wave.....	34

5.6.2. LFO Sync and LFO Rate.....	35
5.7. Refraction Mod.....	36
5.8. Cutoff Mod.....	36
5.9. Down Sample Mod.....	36
5.10. Drive Mod.....	36
5.11. Spray Mod.....	37
5.11.1. Positive and Negative Mod Values.....	37
5.12. Dry/Wet Mix.....	37
5.12.1. Dry/Wet Lock (the padlock icon).....	37
6. Software License Agreement.....	38

# 1. WELCOME TO EFX REFRACT!



Thank you for downloading **Efx REFRACT**, an exciting and unusual effects processor with many facets. This plugin is bound to inspire you with its creative Refraction capabilities and a second processor providing Filtering, Bitcrushing, Distortion, and Harmonizing.

Efx REFRACT can add gentle modulation or trash your source signal beyond recognition. It can even create polyphonic surprises and echoing tails out of very simple raw material.

Efx REFRACT is not meant to be used on the Master Bus or as a mastering tool, but we would advise you to experiment with a number of different sources. Try anything from a simple sine wave to a complex arpeggiated grand piano and learn how this plugin can transform and enrich your sound.

So - try to forget everything you know about effects processors for a while and dig into the knobs and sliders in Efx REFRACT. We hope you enjoy the ride!

## 1.1. So what does Efx REFRACT do?

Imagine audio being *refracted* (split up) into several detuned voices. Try to visualize how you can adjust the number of voices and their spread. Then picture a second processor that distorts, filters, harmonizes or bitcrushes those voices individually. Now you've started to grasp the mechanics behind this plugin.

Efx REFRACT can be used on almost any component in music or audio production: synths, pads, vocal, or even drums. Or you could feed it with noise or be really experimental and run ambient sound, mechanical noises or a speaking voice through our plugin. Whatever the source, the result can be anything from subtle to mind-blowing.

## 1.2. Efx REFRACT Features Summary

- Two unique effects modules: Refraction and a second Processor working in tandem
- Simple control with every knob or slider adjusting multiple processes under the hood
- Refraction processor generates up to 8 stereo voices with adjustable spread and dispersion
- Resonant Bandpass Filter and Feedback Comb Filter
- Bitcrusher for digital distortion and noise
- Multi-algorithm Distortion and Waveshaper
- Harmonizer creating complementary tones
- Stereo spread added to any mono sound
- LFO for modulation of all processes
- HP and LP filters plus Mix control
- Advanced searchable Preset Browser
- Windows or macOS compatible in AAX, Audio Units, and VST2/VST3 formats.

There you have it. We hope you will find Efx REFRACT useful and inspiring. And remember, this is just one fragment of all the available effect plugins from Arturia. There is an ocean of cool stuff awaiting you at [arturia.com](http://arturia.com). Welcome!

## 2. ACTIVATION AND SETUP

### 2.1. Compatibility

Efx REFRACT works on computers and laptops equipped with Windows 8.1 or later or macOS 10.13 or later. It is compatible with the current generation of Apple M1, M1 Pro/Max/Ultra, and other Apple Silicon processors, as well as Macs based on Intel processors. You can use it as an Audio Unit, AAX, VST2, or VST3 plugin within your favorite recording software.



### 2.2. Download and Install

You can download Efx REFRACT directly from the [Arturia Products Page](#) by clicking either the **Buy Now** or **Get Free Demo** options. The free demo is limited to 20 minutes of operation.

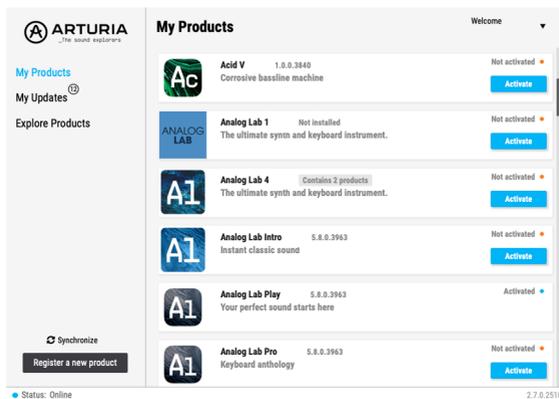
If you have not already done so, now is a good time to create an Arturia account by following the instructions on the [My Arturia webpage](#).

Once you've installed Efx REFRACT, the next step is to register the software. This is a simple process that involves a different software program, the **Arturia Software Center**.

#### 2.2.1. Arturia Software Center

If you haven't installed Arturia Software Center yet, please go to this web page: [Arturia Downloads & Manuals](#).

Look for Arturia Software Center near the top of the page, and then download the installer version for the system you're using (Windows or macOS). Arturia Software Center is a remote client for your Arturia account, letting you conveniently manage all your licenses, downloads, and updates from one place.



After you complete the installation, do the following:

- Launch the Arturia Software Center.
- Log into your Arturia account from Arturia Software Center's interface.
- Scroll down to the 'My Products' section.
- Click on the **Activate** button next to the software you want to start using (in this case, Efx REFRACT).

It's as simple as that! Efx REFRACT will now be activated and you can start working with your new plugin.

## 2.3. Working with Efx REFRACT

Efx REFRACT can be used as a plugin effect within all major Digital Audio Workstation (DAW) programs including Cubase, Digital Performer, Ableton Live, Logic, Pro Tools, REAPER, Studio One, and many more.

Plugins have numerous advantages over hardware, including:

- You can use as many instances on different tracks as your computer can handle.
- You can automate the plugin's settings via your DAW's automation feature.
- All settings and changes are saved with your DAW project, letting you pick up right where you left off.

## 2.4. Audio Settings for Efx REFRACT

Settings for audio routing are handled in your recording software or DAW. These settings are generally located in some type of Preferences menu, though each product does things a bit differently. So, consult your recording software's documentation for information on how to select your audio interface, active outputs, sample rate, project tempo, buffer size, etc.

Now that you've set up your software, it's time to explore all of the possibilities to be found in Efx REFRACT!

### 3. INTERFACE OVERVIEW

Here's a guided tour of the Efx REFRACT user interface. It has been designed with simplicity in mind. However, there are loads of processes going on under the hood, so don't be fooled by the simplistic looks.



The basic components in Efx REFRACT

Key	Name	Function
1	<a href="#">Upper Toolbar [p.10]</a>	This Toolbar houses various utilities, such as Preset handling, Window size, and Help functions
2	<a href="#">In/Out levels [p.25]</a>	Adjusts the gain applied to the input signal and the wet level out of the plugin
3	<a href="#">Refraction processor [p.26]</a>	Refraction happens here
4	<a href="#">Effects processor [p.27]</a>	Controls for the FX processor
5	<a href="#">Filters [p.33]</a>	HighPass and LowPass filter the signal processed by Efx REFRACT
6	<a href="#">LFO [p.34]</a>	An LFO that modulates the effects
7	<a href="#">Mix [p.37]</a>	Blend in the desired amount of effect
8	<a href="#">Lower Toolbar [p.22]</a>	Explanations to functions and global tools can be found here

Click on the links above to jump to the corresponding chapter in this manual.

Efx REFRACT has been designed to be easy to use, but a deeper understanding of its inner workings will help you achieve more predictable results when editing the plugin. We hope you'll find this manual useful.

### 3.1. Standard control behaviors

Mouse gestures will provide detailed control over Efx REFRACT:

- **Hover** to display detailed parameter values plus an explanation about functionality of a control
- **Click** to select a control for editing
- **Drag** to change the value of a knob or a slider
- **Ctrl + Drag** for more precise parameter editing
- **Mouse wheel** can be used to change values for knobs and sliders
- **Double Click** is used to reset parameters to their default values

## 4. TOOLBARS

We're sure you want to start using Efx REFRACT and create beautiful noises. Let's start by connecting the effect.

### 4.1. Insert Effect or Send Effect?

After installation, Efx REFRACT can be used in your DAW in two ways:

#### 4.1.1. As an Insert Effect

The most common way to use effects is as Insert effects, i.e. the signal passes through the plugin and you set the desired amount of effect with the Wet/Dry control in the plugin. This method is never wrong and works well in most cases.



Please note, that the **order** of Insert effects is critical. Placing e.g. a distortion effect before a reverb unit will create a drastically different sound than the other way around.

#### 4.1.2. As a Send Effect

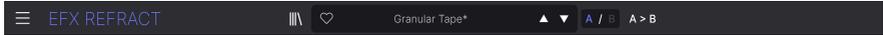
When using a more generic effect, like a reverb or delay plugin, it often makes sense to connect it via an Effects Send (sometimes called Aux Send). This way, the plugin can be shared by several channels in your DAW. This is especially useful when working with CPU hungry plugins, and/or when several channels need the same type of effect.

When used this way, the Dry/Wet control of the plugin should be set to Wet and the amount of effect is controlled by the Send or Aux knob.

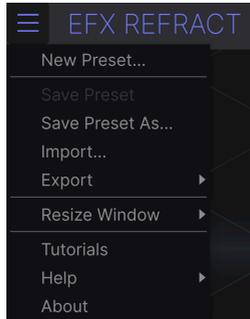
Efx REFRACT can, of course, be used in either way. However, due to the nature of this plugin, it will probably mostly be used as a "specialty effect" on individual channels. Thus, the Insert effect method is usually the best way to go here.

## 4.2. Upper Toolbar

The Upper Toolbar houses several utility functions for handling Presets, setting window size, and the Tutorial.



The hamburger icon (3 horizontal lines) in the upper left corner takes you to the Main Menu. Here you can access a number of useful functions.



### 4.2.1. New Preset

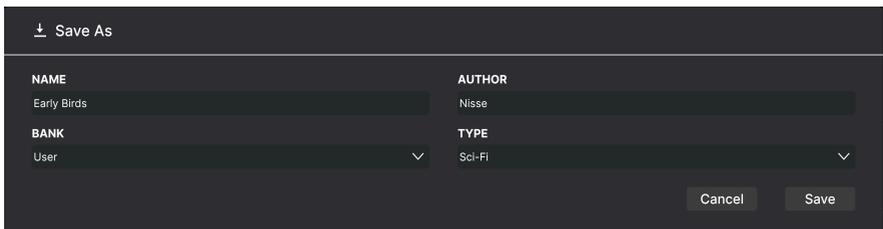
Initializes all parameters to their default values. This can be a good starting point when creating a Preset from scratch.

### 4.2.2. Save Preset

Clicking here overwrites the current Preset with any changes you have made. This applies only to user presets, so this option is greyed out for factory presets.

### 4.2.3. Save Preset As . . .

Clicking this menu item reveals a panel with several options:



- **Name** is where you give your Preset a suitable name.
- **Author** denotes who created this Preset.

- **Bank** gives you the option to sort your Presets in a logical way. You can either use an existing Bank or create a new one by typing in a new Bank name.
- **Type** lets you select a Type and Sub-Type for your Preset. It pays off to select the right effect criteria here; with time you'll probably save numerous Presets, and being able to locate them will prove essential.



♪ The Author, Bank, and Type fields are all useful when searching for Presets in the [Preset Browser](#)

[p.15].

#### 4.2.4. Import

The Import command lets you import a Preset file or entire Bank stored on your computer. It opens a navigation window in your computer's OS to find the proper files.

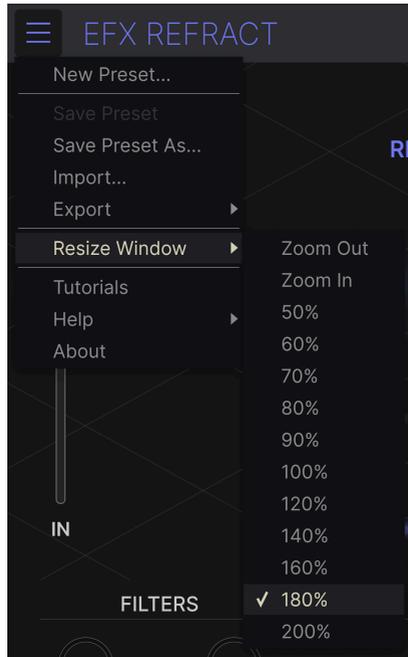
#### 4.2.5. Export . . .

You can export Presets to your computer in two ways: as a single Preset, or as a Bank. In either case, an OS-level navigation window lets you specify where to save the file(s). Both individual Presets and Banks have the filename extension .RFRTX.



- **Export Preset...:** Exporting a single Preset is handy for sharing a preset with someone else. The saved preset can be reloaded using the **Import** menu option.
- **Export Bank:** This option exports an entire Bank of Presets, which is useful for backing up or sharing many Presets at once. Saved Banks can be reloaded using the **Import** menu option.

## 4.2.6. Resize Window

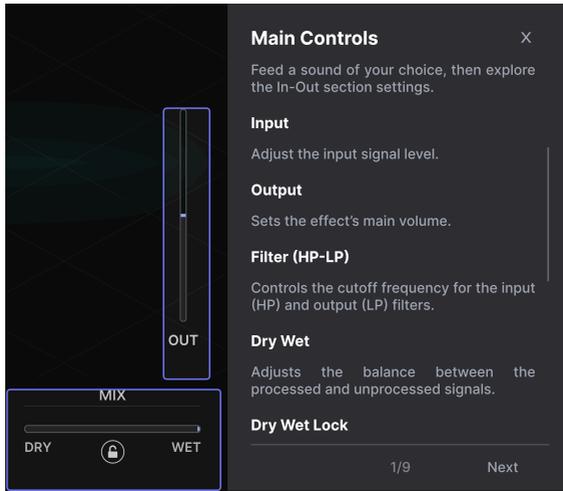


The Efx REFRACT window can be resized from 50% to 200% of its default size (100%) without any visual artifacts. On a smaller screen, such as a laptop, you may want to reduce the interface size so it doesn't dominate the display. On a larger screen or a second monitor, you can increase the size to get a better view of the controls and graphics.

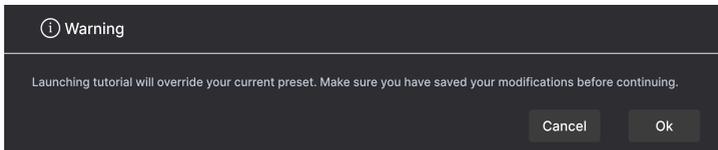
You can also perform this operation using keyboard shortcuts: Every time you press CTRL- (Windows) or CMD- (macOS), the window will shrink by one size increment, and every time you press CTRL+ (Windows) or CMD+ (macOS), the window will grow by one size increment.

In addition, you can click-drag the [resize handle \[p.24\]](#) at the right of the lower toolbar (3 diagonal lines) to resize the window to any of the percentages above.

## 4.2.7. Tutorials



Efx REFRACT comes with interactive tutorials that walk you through the different features of the plugin. Clicking this option opens a pane on the right side of the window where the tutorials appear. Select one to access step-by-step descriptions that highlight relevant controls and guide you through various operations.



Upon launching Tutorials, a friendly reminder will pop up and warn you that you are about to lose your current settings. If necessary, press Cancel and save your current settings before proceeding with the Tutorial.

You exit the Tutorial by clicking on the X at the top right in the tutorials text. Then click on the large Exit Tutorials sign.

## 4.2.8. Help

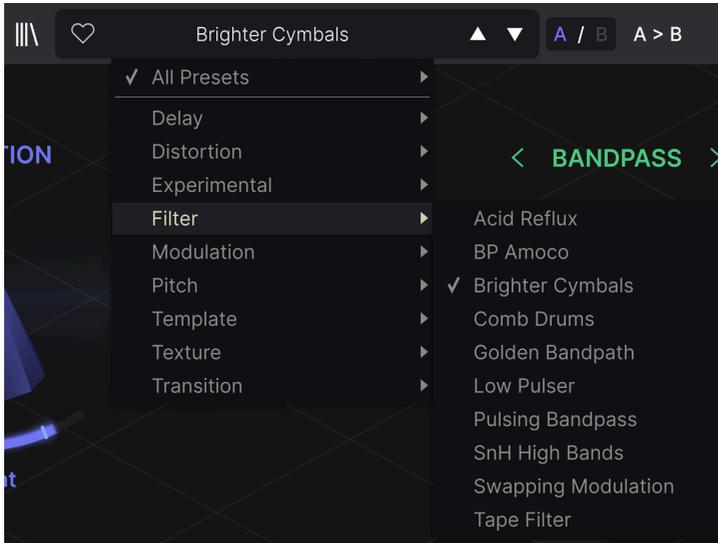
Get more help by visiting links to this user manual and Frequently Asked Questions pages on Arturia's website. You will need an internet connection to access these pages.

## 4.2.9. About

Here you can view the software version and developer credits. Click again anywhere on the screen (outside the About window but inside the plugin) to make this pop-up window disappear.

## 4.2.10. Selecting Presets

Clicking on the Preset name also opens up quick drop-down menus for selecting Presets. You can select to look at lists of Presets organized by Type, as shown below, or look at All Presets at once in alphabetical order.



### 4.2.10.1. Easy Preset Browsing

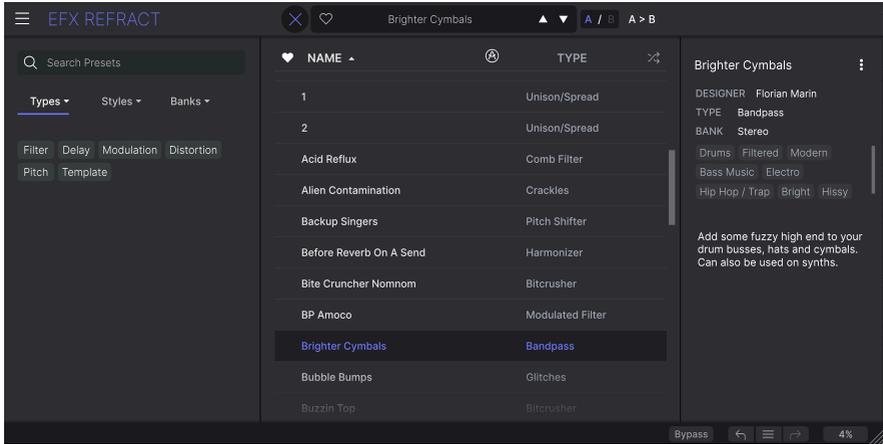
One convenient way to browse the Presets is to click the Up and Down Arrows to the right of the Preset name. This method will take you through the Presets one by one.

**i** The Preset Browser (see below) lets you filter and search Presets. The up and down arrows will only show the results of any currently active search, i.e. the arrows will only step through those Presets. So, make sure any searches are cleared if you simply want to step through *all* available Presets until you find something you like.

**i** An asterisk after the name in the Preset Name Pane (\*) indicates that you've edited that Preset and not yet saved it.

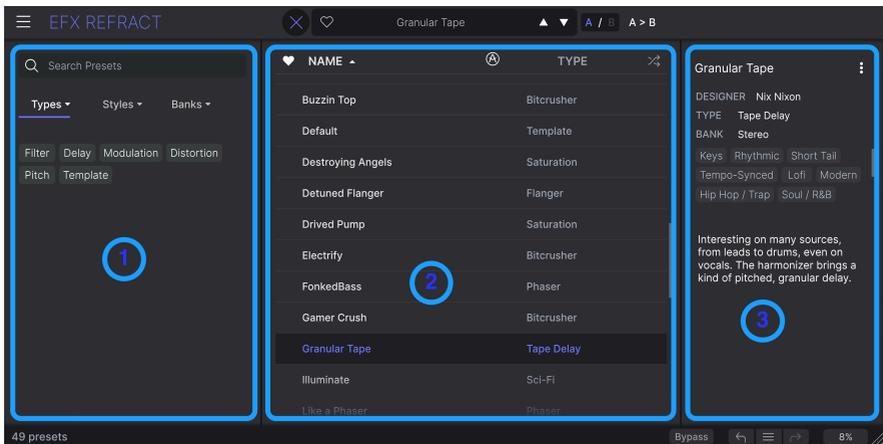
### 4.3. The Preset Browser

Clicking on the Bookshelf icon at the top center of the plugin window takes you to the Preset Browser. The purpose of this Browser is to make your life easier when managing a lot of Presets.



When the Preset Browser is open, the Bookshelf icon becomes a large X. Click the X to close the Browser when you're done.

The three main areas of the Preset Browser are as follows:

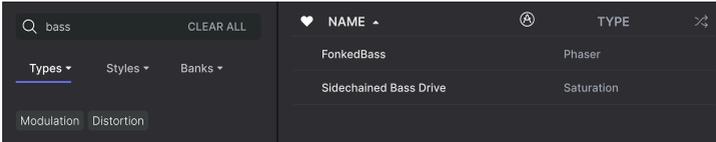


Number	Area	Description
1	Search	Searches for Presets by text entry with filters for Type, Style, and Bank.
2	Results Pane	Displays search results, or all Presets if no search criteria are active.
3	Preset Info	Displays Preset Details. You can edit details for Presets in the User Bank.

## 4.4. Searching Presets

Click on the Search field at the top left and enter any search term. The browser will filter your search in two ways: First, simply by matching letters in the Preset name. Second, If your search term is close to that of a Type or Style, it will include results fitting those tags as well.

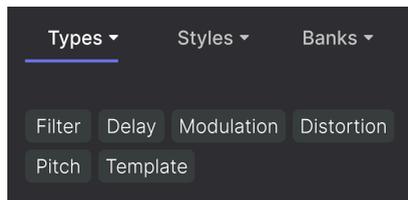
The Results Pane will show all Presets that fit your search. Click the **CLEAR ALL** text to clear your search terms.



### 4.4.1. Using Tags as a Filter

You can narrow (and sometimes expand) your search by using different *tags*. There are two kinds of tags: **Types** and **Styles**. You can filter by one, the other, or both.

#### 4.4.1.1. Types



Types are categories of audio effects: filter, delay, modulation, and so on. With a clear search bar, click the **Types** drop-down to bring up the list of Types. Click on a Type to show its sub-types.

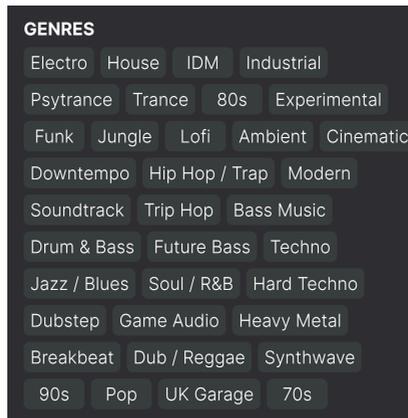
The display order of the Name and Type columns in the Results Pane can be inverted by clicking the arrow buttons to the right of their titles.

 You can specify the type when [saving a Preset \[p.10\]](#). That Preset will then show up in searches where you've selected that Type.

#### 4.4.1.2. Styles

Styles are, well ... exactly that. Accessed by the **Styles** button, this area has three further subdivisions:

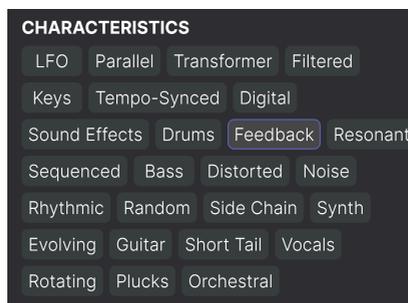
- **Genres:** Identifiable musical genres such as Electro, House, IDM, etc.:



- **Styles:** General “vibe” such as Bizarre, Sci-Fi, Wide, etc.:



- **Characteristics:** Even more detailed audio qualities such as LFO, Parallel, Transformer, and many more:



Click any one, and the results will show only Presets that match that tag. Notice that when you select any tag, several other tags usually grey out and become unavailable. This is because the browser is *narrowing* your search by a process of elimination.

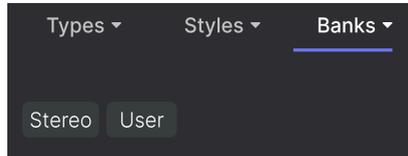


Note that this is the opposite of how selecting multiple Types *broadens* your search.

Deselect any tag to remove it and widen the search without having to start all over again. You can also clear the tag by clicking the X to the right of its text, which appears at the top.

Note that you can search by a string of text, Types and Styles, or both, with the search becoming narrower as you enter more criteria. Clicking **CLEAR ALL** in the search bar will remove all Type and Style filters as well as any text entry.

#### 4.4.1.3. Banks



To the right of the **Types** and **Styles** drop-downs is the **Banks** drop-down menu, which lets you do your search (using all the methods above) within the Factory or User Banks.

### 4.5. The Results Pane

♥	NAME ▲	Ⓐ	TYPE	↔
♥	Acid Reflux		Comb Filter	
	BP Amoco		Modulated Filter	
♥	Brighter Cymbals		Bandpass	
	Comb Drums	Ⓐ	Comb Filter	
	Golden Bandpath	Ⓐ	Modulated Filter	
	Pulsing Bandpass		Sequenced Filter	
	Swapping Modulation		Modulated Filter	
	Tape Filter		Modulated Filter	

The central area of the browser shows search results, or simply a list of all Presets in the Bank if no search criteria are active. Simply click on a Preset name to load it.

### 4.5.1. Sorting Presets

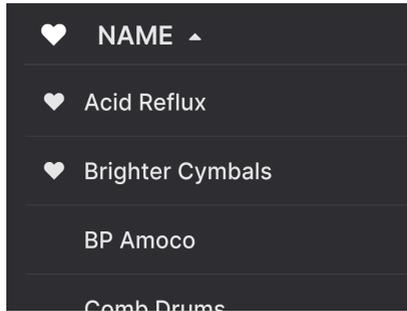
Click the **NAME** header in the first column of the Results list to sort the Presets in ascending or descending alphabetical order.

Click the **TYPE** header in the second column to do the same thing by Type.

### 4.5.2. Liking Presets

As you explore and create Presets, you can mark them as **Liked** by clicking the Heart icon next to their names. This icon also appears in the Upper Toolbar's Preset Name Pane.

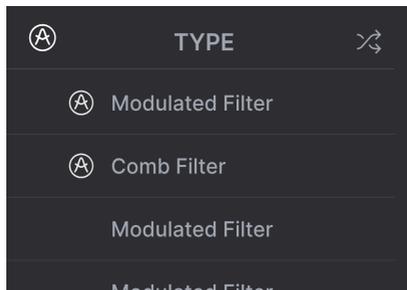
Clicking on the Heart icon makes all of your liked Presets show up at the top of the results list, as shown here:



A filled-in Heart icon indicates a Liked Preset. An outline indicates a Preset that has not been Liked (yet). Click the Heart at the top of the list again to return the list to its previous state.

### 4.5.3. Featured factory Presets

Presets accompanied by the Arturia logo are factory creations we think really showcase the capabilities of Efx REFRACT.



Clicking the Arturia icon at the top of the Results pane sorts all featured Presets to appear at the top of the list.

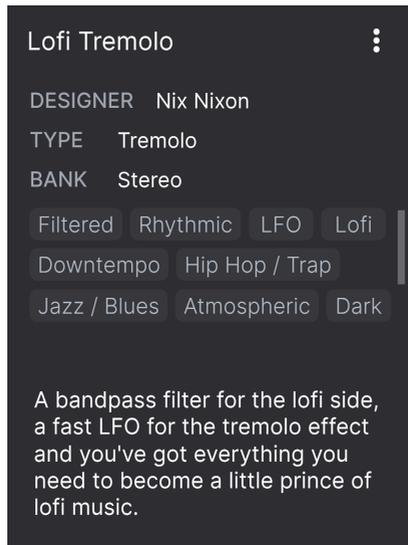
#### 4.5.4. Shuffle Button



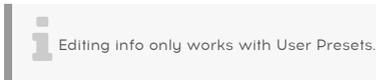
This button randomly reorders the Preset list. Sometimes this can help you find the sound you're looking for more quickly than scrolling through the entire list.

#### 4.6. Preset Info Section

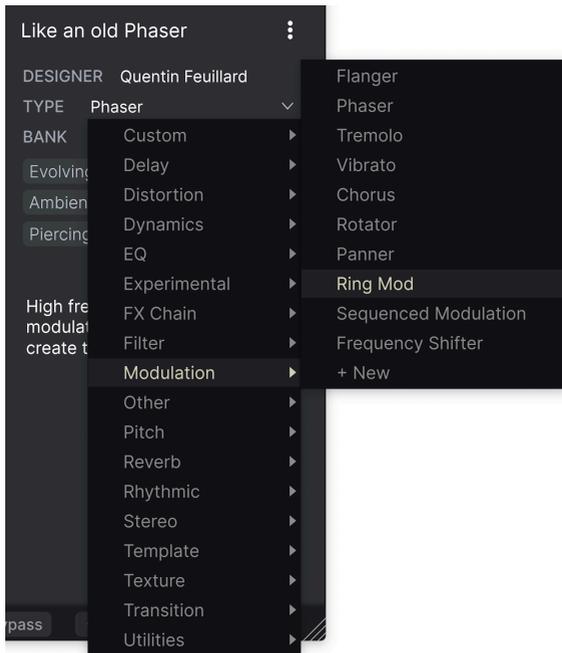
The right side of the browser window shows specific information about each Preset.



For Presets in the User bank (as the result of a *Save As* operation), you can enter and edit the information in the Preset Info Section and it will update in real time. This includes the Designer (author), Type, all Style tags, and even a custom text description at the bottom.



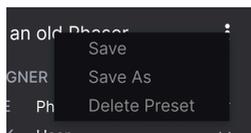
To make the desired changes, you can type directly in the text fields or use one of the pull-down menus to change the Bank or Type. As shown here, you can also use a hierarchical menu to select the Type or even create a new Type or Subtype.



**i** Types and Styles changes you make here are reflected in searches. For example, if you remove the "Bright" Style tag from a Preset and then save that Preset, it will not show up in future searches for Bright Presets.

#### 4.6.1. Preset Info Quick Menu

Clicking the icon with three vertical dots brings up a quick menu for Save, Save As, and Delete Preset operations:



For sounds in Factory banks, only **Save As** is available.

## 4.6.2. Dual Settings and Copy



*Preset state A active with the option to copy settings to B*



*Preset state B active with the option to copy settings to A*

Each Preset is actually two Presets in one! Using the A and B buttons, you can switch between two completely different sets of knob. These are saved within each Preset.

When A is active, clicking **A > B** will copy the A settings to B. When B is active, clicking **A < B** will copy the B settings to A.



When you edit settings in a Preset and close your DAW project without saving the Preset, the changes will be remembered when you reopen it – but they will be recalled in Slot A. This means that editing settings in Slot B and closing your DAW without saving them will move those settings over to Slot A when you reopen the project – and Slot B will be blank. Save often!

## 4.7. Lower Toolbar



The Lower Toolbar of the Efx REFRACT interface can be thought of in terms of left and right halves. On the left is the Control Description display, and on the right are buttons for several useful utility functions.

### 4.7.1. Control Descriptions

Mix: Sets the balance between the dry and wet signal

*This Control Description pops up when you mouse over the Mix slider*

Operate or hover on any knob, button, icon, or other control, and a brief description of what it does appear in the lower left-hand corner.

### 4.7.2. Utility Functions



The lower right corner of the plugin window gives access to useful global functions.

### 4.7.2.1. Bypass

The **Bypass** button bypasses the Efx REFRACT plugin entirely. It's useful for quick comparisons of dry versus processed signal without having to bypass the plugin at the DAW level.

### 4.7.3. Undo, Redo, and History

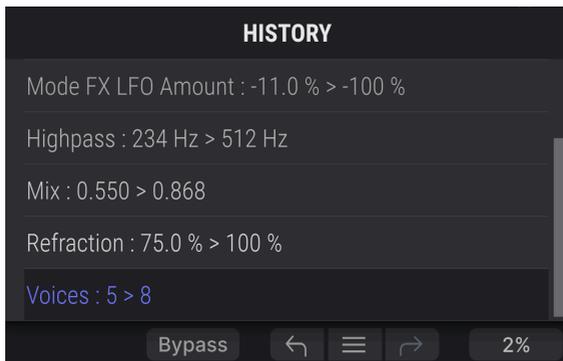
When editing a plugin, it's all too easy to overshoot the sweet spot for one or more controls, and then wonder how to get back to where you were. Like all Arturia plugins, Efx REFRACT offers comprehensive Undo, Redo, and History functions so that you always have a safe way back.

Use the left (**Undo**) and right (**Redo**) arrows to go back and forward one control movement at a time.

Click the left arrow to revert to the state before the most recent edit you made. You may click repeatedly to undo several edits in reverse time order.

Click the right arrow to redo the most recent edit you undid. If you have undone several, you may click repeatedly to redo them in forward time order.

#### 4.7.3.1. History



Click the center Hamburger (three lines) button to open the History window, as shown above. This provides a step-by-step account of every move you have made in Efx REFRACT. Clicking on an item in the list not only re-executes that move – it returns the plugin to the overall state it was in when you first made that move.



Note that the A and B controls settings within a Preset have separate Undo Histories.

## 4.7.4. CPU Meter

At far right is the **CPU Meter**, which displays the overall load Efx REFRACT is placing in your computer CPU. Since it deals only with this plugin, it is not a substitute for the resource metering tools in your DAW.

### 4.7.4.1. Panic

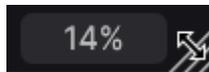


*Mousing over the CPU Meter accesses the PANIC function*

Mouse over the CPU Meter, and it will display the word **PANIC**. Click to send an all-sounds-off command that silences any sound processed through Efx REFRACT. This is a momentary command, so sound will resume if your DAW is still playing.

In the event of serious runaway audio (say, from an unrelated delay effect that has gone into a feedback loop), stop your DAW playback and disable the plugin that is causing the problem.

## 4.7.5. Resize Handle and Max View



*Click the Max View icon (the blue arrows) to reset the window size*

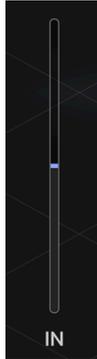
Grab and drag the diagonal lines to the right of the CPU meter to resize the Efx REFRACT plugin window. This is a shortcut for quickly switching between increments in the [Resize Window \[p.12\]](#) menu. When you let go, the plugin window will snap to the nearest size increment.

Sometimes, you may see a button with two diagonal blue arrows (the Max View button) over the Resize handle. This happens when, for some reason, the window size is not displaying all of the controls of Efx REFRACT. Click it to restore a full view of the open controls.

## 5. USING EFX REFRACT

At the heart of Efx REFRACT are the **Refraction** and **Mode Effect** modules, and below them a section for **Filtering and Modulating** the modules.

### 5.1. Input Level Control



When a signal enters Efx REFRACT, it will pass through the Input level control. Use this slider to either prevent the signal from overloading **or** make the signal overload the input stage. Distortion can be a desired or undesired spice to your sound.

## 5.2. Refraction

To refract something is to redirect or split something, in our case **the pitch of audio**.



As audio passes through the Refraction processor, it duplicates the signal in up to 8 stereo Voices. Both the number of Voices and their Spread can be adjusted.

Does this sound like a Chorus effect unit to you? Well, in a way Efx REFRACT could be described as a "Super Stereo Deluxe Chorus Unit". But it's so much more!

### 5.2.1. Amount

The slider will affect the amount of Spread and Dispersion the Refractor outputs. The range here is 0-100 %.

Aside from the number of Voices and their relative distance to each other, this slider also increases the stereo width when moved to the right *and* disperses the Mode Effect's primary control for each voice, centered around the value set on the Mode Effect's control.

**i** The relationship between the Refraction Amount control and the Mode Effect's primary control (i.e. Filter Cutoff Frequency, Bitcrusher Downsample, Distortion Drive and Harmonizer Spray) is very special and one of Efx REFRACT's most unique features. Make sure to explore this relationship as the results can be out of this world!

### 5.2.2. Voices

Efx REFRACT will split the input signal into Voices. This slicer determines the number of Voices (is 1-8).

The Voices output from of the Refractor are fed into the Effect Processor. Please note, that each voice will be treated individually by its own Effects Processor. The Effects Processor is **polyphonic**, if you like.

## 5.3. Mode Effect Type

This processor can perform many different tasks.

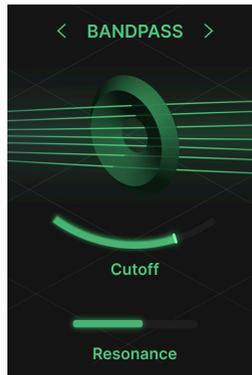
- Bandpass Filter
- Comb Filter
- Bitcrusher
- Distortion
- Harmonizer

Only one Effect can be used at any one time, but rest assured; the combined impact of the Refractor and Effect can be quite astonishing and earth shattering!

**i** It may seem as you are looking at one Effects Processor, but under the hood there is one pair of processors for each of the 8 voices. This fact is important, especially when it comes to the Bitcrusher and Distortion effects.

### 5.3.1. Type 1: Bandpass

A Bandpass Filter passes frequencies within a certain range and rejects (attenuates) frequencies outside of that range.



#### 5.3.1.1. Cutoff

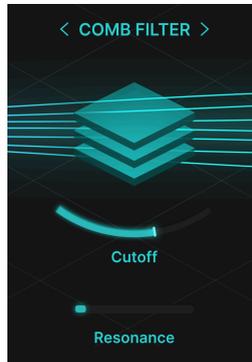
Pushing the Cutoff slider from left to right will move the frequency range "window" from low to high. Thus, in the left position, bass frequencies will pass and in the right position, high frequencies will pass through the filter.

#### 5.3.1.2. Resonance

The Resonance slider turns the filter into a **Resonant Bandpass Filter** by accentuating a peak in the frequency range "window". You will clearly hear this effect if you turn up the Cutoff Frequency and move the Resonance slider back and forth. The effect is very synth-like.

### 5.3.2. Type 2: Comb Filter

In a Comb Filter, a second channel is added to the audio, and this channel is delayed at various amounts. This causes a phasing effect, sometimes even a heavy flanging-like effect.



#### 5.3.2.1. Cutoff

The Cutoff slider selects the frequency of the feedback loop. With Resonance at values below 25 %, you will hear subtle notching, like multiple notch filters.

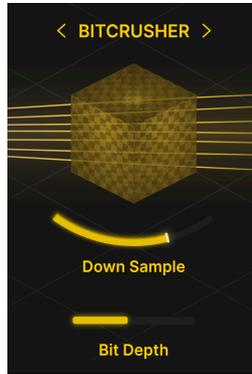
If you put a slow LFO on the cutoff and use low Resonance, it will sound a bit like a phaser without much feedback.

#### 5.3.2.2. Resonance

The Resonance slider causes the delayed signal to increase feedback the more you move the slider to the right. At the extreme right, it creates the effect of a "self-oscillation" delay.

### 5.3.3. Type 3: Bitcrusher

A Bitcrusher reduces the sample rate and bit depth of audio. A lower sample rate results in a reduced frequency range, and fewer bits increase digital distortion. Instant lo-fi!



With the introduction of the CD (Compact Disc), audio was finally considered good enough to supersede analog music distribution. A Bitcrusher turns the clock backwards to a time when digital audio was noisy and generally considered lo-fi.

#### 5.3.3.1. Down Sample

In its leftmost position, there is no down sampling at all. Moving the slider to the right gradually reduces the sample rate and the sound becomes muddier and much less detailed. You could also call the effect more personal, warmer, retro, or aggressive.

#### 5.3.3.2. Bit Depth

Reducing the number of bits in digital audio is a shortcut to lo-fi. With fewer bits, the dynamic range is reduced and waveforms become clicks and buzzes. Instant chiptune sound? You bet!

### 5.3.4. Type 4: Distortion

Distortion adds harmonic and inharmonic overtones and leads to a compressed sound that is often described as "warm" or "dirty", depending on the type and intensity of distortion used. But you knew that already!



#### 5.3.4.1. Drive

This slider controls the amount of gain applied to the distortion input. The more the merrier.

Make sure to investigate how Distortion affects your sound even at low Drive settings, as there will be subtle changes to the harmonics and general character.

Please note, that the Voices output by the Refraction processor (1-8 of them) are all treated individually. When treated with distortion, the sound will become different than if they were distorted as one channel.



The setting of the In level slider in Efx REFRACT will greatly affect the response of the Distortion effect. More In level equals more distortion.

#### 5.3.4.2. Algorithm

Distortion can really add color and character to everything. Since there are so many kinds of distortion, we've packed a 4 different types into Efx REFRACT.



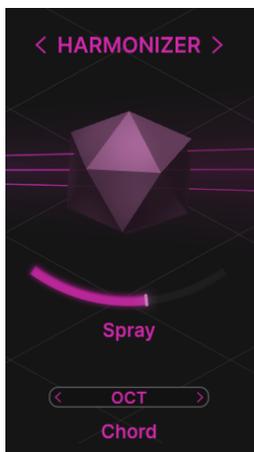
- **Tape:** The kind of saturation you get when driving a tape recorder too hard.
- **Germanium:** The sound of Germanium diodes gives that classic valve-like character.
- **Soft Bounce:** Here you get distortion that sits somewhere between the two above and the one below.
- **Sine Folder:** This algorithm sounds harsh and FM-like, well suited for monophonic sounds.



If the sound becomes too muddy, consider increasing the High Pass Filter frequency to manage low end clutter.

### 5.3.5. Type 5: Harmonizer

The Harmonizer shifts the pitch of the (1-8) Voices output by the Refractor. This can create anything from basic octave doubling to intricate chords.



You may want to experiment with the results you get from monophonic and polyphonic sources, or even inharmonic sounds.

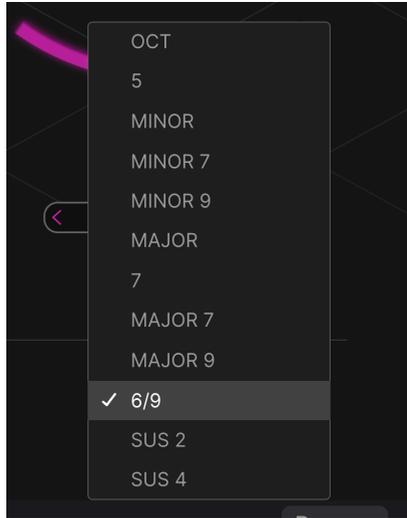
#### 5.3.5.1. Spray

This slider controls the amount of temporal dispersion (spread over time) added by the Harmonizer. At higher values there's a "tail" of 1500 milliseconds.

Spray also does a good job at widening the stereo image and, once going past mid-point, gradually introduces a shimmer effect.

### 5.3.5.2. Chord

The Chord mode is quite interesting. In true Harmonizer fashion, it adds intervals to the incoming material, be it monophonic or polyphonic.



These intervals are organized in Intervals and Chords:

- Octave
- 5
- Minor
- Minor 7
- Minor 9
- Major
- 7
- Major 7
- Major 9
- 6/9
- Sus 2
- Sus 4

When sending a single note (e.g. a sine wave) into the Harmonizer, you will clearly hear these Intervals and Chords being created.



In order to create Intervals and Chords, there must be enough Voices output by the Refraction processor. To create an Octave, you'll need at least two voices while a full Major 7 chord needs 4 Voices.

## 5.4. Output Level Control

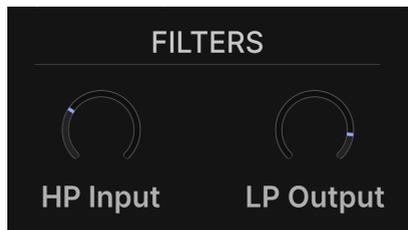
When the signal leaves Efx REFRACT, the effect part of the sound passes through the Output level control. This slider adjusts the volume of the wet signal only.



**i** You may want to compare the unaffected and the processed versions of your sound with the Bypass switch. When doing so, it's always easier if the two versions are equally loud. Adjusting the Out level is the way to do it.

## 5.5. Filters

Filters are used in all kinds of audio production, and it's important to understand how the HP and LP Filters can help you sculpt your sound in Efx REFRACT.



### 5.5.1. HP Input

Most of the time, you will want to cut out some degree of the low frequencies from the signal that goes into the Efx REFRACT processors. This is easily done by turning the HP Input filter knob.

The default frequency is set to 150 Hz, but you may find a setting more suitable for your needs. The total range of the HP Filter is 20-20 000 Hz (hertz).



An HP (high pass) filter is used to remove low frequencies. High Pass means that high frequencies pass through the filter, low frequencies do not.

### 5.5.2. LP Output

The LP (low pass) Filter helps you tame the upper frequencies at the output stage. If the sound gets too fizzy or sharp, try lowering the LP Output knob.

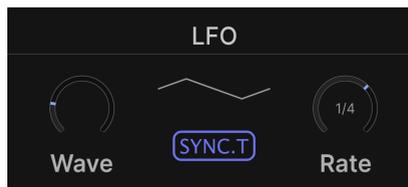
The default setting is 20 000 Hz, which in practice means the LP Filter has no effect on the sound.



An LP (low pass) filter is used to remove high frequencies, i.e. let the low frequencies pass.

## 5.6. LFO

To spice things up, we've added an LFO (Low Frequency Oscillator) in the lower part of the plugin window. This device is probably the single most useful item next to the Filter in the world of synthesis and effects.



The LFO **modulates** (tickles, disturbs, changes) the destination it's been chosen to modulate.

You can also look at the LFO as a set of helping hands, effectively giving the player an infinite number of "hands" to turn knobs and push buttons in various ways.

### 5.6.1. LFO Wave

Located near the center of the plugin window are the main controls for the LFO.

LFO Wave lets you select the waveform used by the LFO. The shape of the Wave is illustrated to the right of the knob. These images are visual examples of how the Waves actually behave.

Available LFO Waves are:

- **Sine**
- **Triangle**
- **Saw**
- **Square**
- **Sample & Hold**
- **Sample & Glide**



**Sample & Hold** jumps between random values. **Sample & Glide** glides smoothly between random values.

### 5.6.2. LFO Sync and LFO Rate

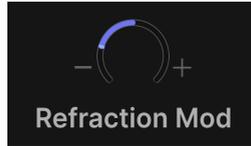
The **LFO Rate** can be set to an independent speed or be synced to the tempo of the DAW. The **LFO pattern or rhythm** can be defined differently depending what Sync mode is chosen.

Sync	Rate	Pattern
Hertz	Independent speed	Speed set by Rate knob (0.025-50.0 Hz)
Sync	Synced to DAW tempo	One pulse per beat
Sync Straight	Synced to DAW tempo	Subdivision set by Rate knob (16 bars - 1/32 notes)
Sync Triplets	Synced to DAW tempo	Subdivision set by Rate knob (16 bars - 1/32 note triplets)
Sync Dotted	Synced to DAW tempo	Subdivision set by Rate knob (16 bars - 1/32 dotted notes)

## 5.7. Refraction Mod

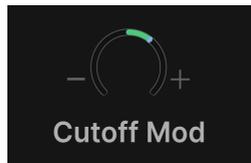
There are two modulation destinations in Efx REFRACT:

- **Refraction Mod** which is fixed and always available.
- The modulation of the primary control for the **Mode Effect**, which will change depending on the chosen effect. This destination could alternatively be **Cutoff Frequency** mod for Bandpass and Comb Filters, **Downsample** modulation for Bitcrusher, **Drive** for Distortion, and **Spray** for the Harmonizer.



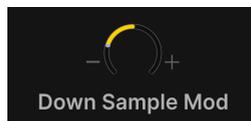
This knob controls the LFO Amount for Refraction. Negative and positive values are possible.

## 5.8. Cutoff Mod



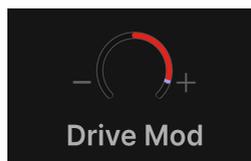
Set this knob to the desired amount of modulation of the Cutoff Frequency in the **Bandpass** and **Comb Filters**.

## 5.9. Down Sample Mod



Controls LFO modulation of the amount of sample rate reduction in the **Bitcrusher**.

## 5.10. Drive Mod



Sets the amount of modulation of Drive in the **Distortion** algorithms.

## 5.11. Spray Mod



Adjust how much the LFO will modulate the Spread feedback loop for shimmer effect in the **Harmonizer**.

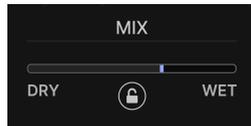
### 5.11.1. Positive and Negative Mod Values

While the LFO will create movement in the modulation, the positive and negative settings of the two Mod knobs will allow for different direction in that movement.

**i** With one Mod knob set to a minus value and the other to plus, you will create mirrored or opposite movements.

## 5.12. Dry/Wet Mix

This slider sets the balance between the Dry (no effect) and Wet (only effect) parts of the sound.



If you use Efx REFRACT as an **Insert effect**, this slider is crucial to the overall sound. You may want to experiment to decide how much effect your sound needs.

If you use Efx REFRACT as a **Send effect**, set the Dry/Wet slider to fully Wet. The Send control in your DAW will set the balance between Dry and Wet sound.

### 5.12.1. Dry/Wet Lock [the padlock icon]

With this lock enabled, switching Presets won't affect the current Dry/Wet balance.

## 6. SOFTWARE LICENSE AGREEMENT

In consideration of payment of the Licensee fee, which is a portion of the price you paid, Arturia, as Licensor, grants to you (referred to as 'Licensee' from now on) a non-exclusive right to use this copy of the Efx REFRACT plug-in (referred to as 'SOFTWARE' from now on).

All intellectual property rights in the software belong to Arturia SA (referred to as 'Arturia' from now on). Arturia permits you to only copy, download, install and use the software in accordance with the terms and conditions of this Agreement.

The product contains product activation for protection against unlawful copying. The OEM software can be used only following registration. Internet access is required for the activation process.

The terms and conditions for use of the software by you, the consumer, appear below. By installing the software on your computer, you agree to these terms and conditions. Please read the following text carefully in its entirety. If you do not approve of these terms and conditions, you should not install this software and you should proceed to return it back to where you purchased it immediately or within 30 days at the latest, in return for a refund of the purchase price. Your return must include all written materials, all packaging in an undamaged state, and the enclosed hardware.

**1. Software Ownership** Arturia shall retain full and complete title to the SOFTWARE recorded on the enclosed disks and all subsequent copies of the SOFTWARE, regardless of the media or form in which the original disks or copies may exist. The License is not a sale of the original SOFTWARE.

**2. Grant of License** Arturia grants you a non-exclusive license for the use of the software according to the terms and conditions of this Agreement. You may not lease, loan or sublicense the software.

The use of the software within a network where there is a possibility of simultaneous multiple use of the program, is **illegal**.

You are entitled to make a backup copy of the software to be used for none other than storage purposes.

You do not have a right to use the software further than within the limited rights as specified in this Agreement. Arturia reserves all rights not expressly granted.

**3. Software Activation** Arturia may use a compulsory activation of the software and a compulsory registration of the OEM software for license control to protect the software against unlawful copying. If you do not click to accept the terms and conditions of this Agreement, the software will not work.

In that case, the product including the software may only be returned within 30 days following the purchase of the product. Upon return, a claim according to § 11 shall not apply.

**4. Support, Upgrades and Updates after Product Registration** You can only receive support, upgrades and updates following your product registration. Support is provided only for the current version and for the previous version only for one year after publication of the newer version. Arturia can modify and partly or completely adjust the nature of the support (hotline, forum on the website, etc.), upgrades and updates at any time.

The product registration is possible during the activation process or at any later time via the Internet. During this process, you will be asked to agree to the storage and use of your personal data (name, address, contact, email address and license data) for the purposes specified above. Arturia may also forward these data to third parties, in particular its distributors, for support purposes and for verifying the right to an upgrade or an update.

**5. Unbundling Prohibited** The software typically contains a variety of different files which ensure the complete functionality of the software in its default configuration. The software may be used as one product only. It is not required that you use or install all components of the software.

You must not arrange components of the software in a new way and develop a modified version of the software or a new product as a result. The configuration of the software is not to be modified for the purpose of distribution, assignment or resale.

**6. Assignment of Rights** You may assign all your rights to use the software to another person only if: (a) you assign to the other person the following: (i) this Agreement, and (ii) the software or hardware provided with the software, subsequently packed or preinstalled, including all copies, upgrades, updates, backup copies and previous versions, which granted a right to an update or upgrade on this software, (b) you do not retain upgrades, updates, backup copies and previous versions of this software, and (c) the recipient accepts the terms and conditions of this Agreement as well as other regulations according to which you acquired a valid software license.

A return of the product due to a failure to accept the terms and conditions of this Agreement, e.g. the product activation, shall not be possible upon this re-assignment of rights.

**7. Upgrades and Updates** You must have a valid license for a previous or more inferior version of the software in order to be allowed to use a software upgrade or update. Upon transferring this previous or more inferior version of the software to third parties, the right to use the software upgrade or update will not apply.

The acquisition of an upgrade or update does not in itself follow a right to use the software.

The right for support on a previous or inferior version of the software expires upon the installation of an upgrade or update.

**8. Limited Warranty** Arturia warrants that the disks on which the software is provided on is free from defects in materials and workmanship under normal use for a period of thirty (30) days from the date of purchase. Your receipt serves as evidence of the date of your purchase. Any implied warranties on the software are limited to thirty (30) days from the date of purchase. Some states do not allow limitations on duration of an implied warranty, so the above limitation may not apply to you. All programs and accompanying materials are provided 'as is' without warranty of any kind. The complete risk as to the quality and performance of the programs is with you. Should the program prove defective, you assume the entire cost of all necessary servicing, repair or correction.

**9. Remedies** Arturia's entire liability and your exclusive remedy shall be at Arturia's option either: (a) return of the purchase price, or (b) replacement of the disk that does not meet the Limited Warranty and which is returned to Arturia with a copy of your receipt. This limited Warranty becomes void if failure of the software has resulted from an accident, abuse, modification, or misapplication. Any replacement software will be warranted for the remainder of the original warranty period or thirty (30) days, or whichever option is longer.

**10. No Other Warranties** The above warranties are in lieu of all other warranties, expressed or implied, including but not limited to the implied warranties of the commercial value and fitness for a particular purpose. No oral or written information or advice given by Arturia, its dealers, distributors, agents or employees shall create a warranty or in any way increase the scope of this limited warranty.

**11. No Liability for Consequential Damages** Neither Arturia nor anyone else involved in the creation, production, or delivery of this product shall be liable for any direct, indirect, consequential, or incidental damages arising from the use of or inability to use this product (including without limitation, damages for loss of business profits, business interruption, loss of business information and the like) even if Arturia was previously advised of the possibility of such damages. Some states do not allow limitations on the length of an implied warranty or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.