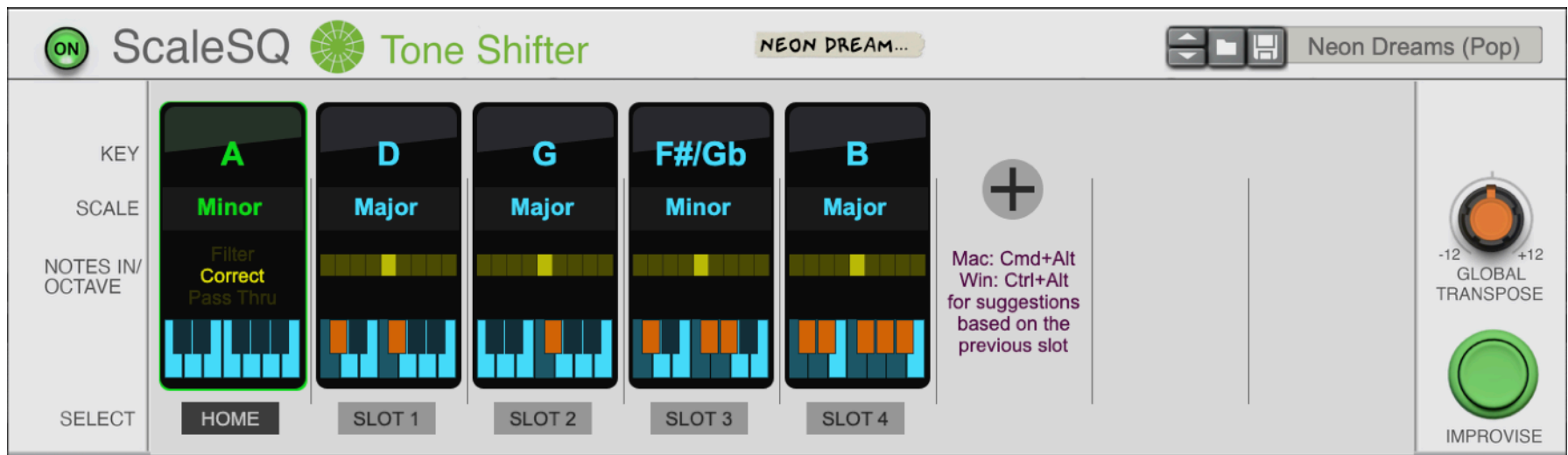# ScaleSQ
Tone Shifter Player

Rack Extension for Reason

USER MANUAL
version 1.0.5

Table of Contents

1. Introduction

ScaleSQ is a player device designed to help you take your music in new directions. If you've heard about key and scale modulations, but aren't quite sure how to apply these techniques in your compositions, **ScaleSQ** makes the process more intuitive.

The idea is simple: set the home key and scale of your song, then use **ScaleSQ**'s suggestions to explore new harmonic possibilities. These suggestions are based on tried-and-true modulation techniques, including direct diatonic or modal shifts (e.g., C Major → D Dorian), parallel changes (e.g., C Major → C Minor), chromatic and circle of fifths modulations. You can create up to seven modulation slots and switch between them manually or through automation in your DAW.

What sets **ScaleSQ** apart is its ability to preserve musical relationships across modulations. Instead of rigid note correction, it maps scale degrees ensuring that melodies and chords maintain their harmonic intent when shifting to a new key or scale. This results in more natural, musically expressive transitions.

Another unique feature of **ScaleSQ** is its ability to daisy-chain multiple instances and sync them via CV, allowing all modulations to be controlled from a single device. Automate one, and they all follow, keeping different parts of your composition harmonically aligned as you explore new ideas.

Break free from static harmony and add new dimensions to your music, effortlessly.

Product Details:

- 8 slots with assignable key & scale

- Note correction or filtering available from the home slot

- 7 modulation slots with octave shifting from -4 to +4 octaves

- 30+ scale types plus modal variations for each scale

- Modulation selection can be automated in the Reason sequencer or other DAW

- Suggestion engine can show modulation options based on either the "home slot" or the "previous slot"

- Global transpose control from -12 to +12 semitones

- Momentary improvise button for random modulation selection

- Dual mode operation: Send mode and Receive mode. In Send mode, the device sends the selected slot information via CV to other connected devices in Receive mode

- Multiple device can be daisy chained and synced via the Sync In and Out CV jacks

- Comprehensive Remote implementation

2. Overview

2.1 Front
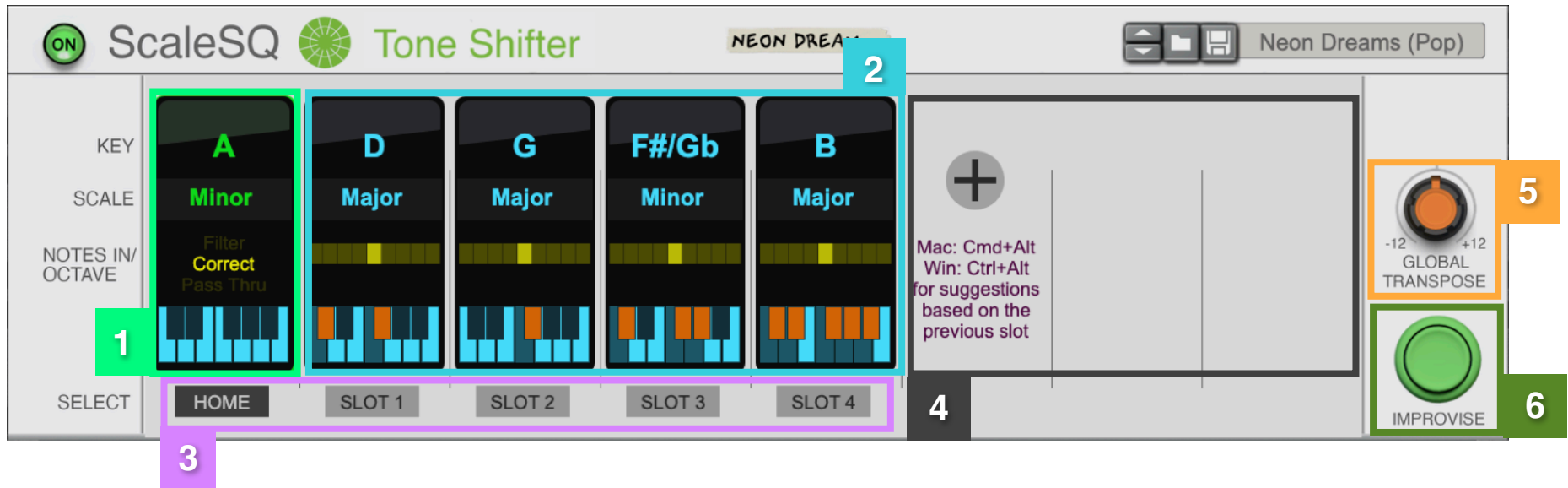
1. Home slot: this is the place to set the main key and scale of your song. Here you can also set how incoming notes are treated, with three modes: Pass thru, Correct and Filter.

2. Filled modulations slots: these are candidate modulation slots which are active and have a key and scale assigned to them. The horizontal yellow line represents the amount of octave shifting. The keyboard shows the notes which are shared with the home slot in light blue, while notes not in common are shown in orange.

3. Slot select buttons: click on the desired button to select a slot

4. Unfilled modulations slots: these slots are currently not active. Click on the + sign to get suggestions for possible modulation options based on the settings of the home slot. Press down Cmd(Mac)/Ctrl(Win) + Alt and click on the + sign to get suggestions based on the settings of the previous slot.

5. Global transpose knob affecting all notes from all slots. Transposition ranges from -12 to +12 semitones

6. Momentary improvise button randomly selects one of the available slots. When released, returns to the previously selected slot

2.2 Back
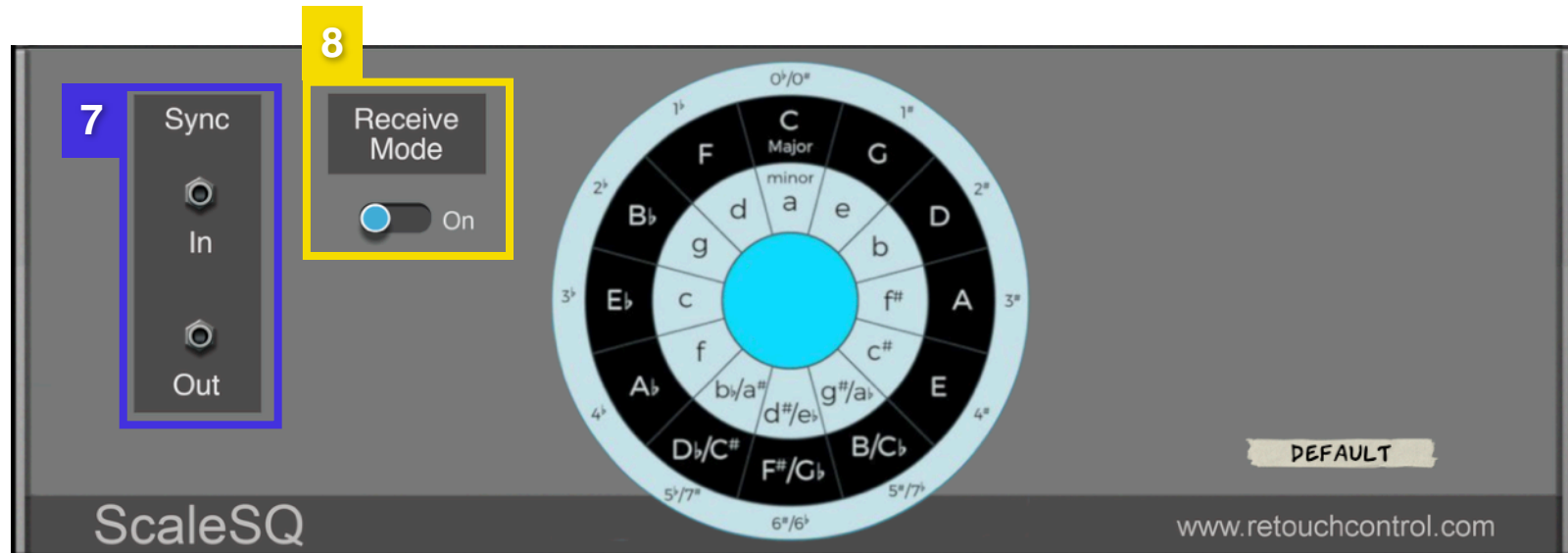
7. CV Input and Outputs to sync devices. Connect the **Out** of the main device to the **In** of of a second device to sync them. Switch the second device to Receive mode. Devices can be daisy chained.

8. Switch on Receive mode if you want to sync the current device to another device in Send mode (with Receive button OFF)

3. Usage

ScaleSQ is a player device and so it needs to be instantiated on top of an instrument. The next sections explain the basic principle of operation, how to activate and edit slots, how to use the suggestion engine, and how to sync several devices via CV.

3.1 The basic principle of operation

The home slot is where you set the current key and scale of the song. This is used as a reference when modulating to other slots. The example below illustrates the simple case of what happens to the notes of a melody when modulating from C Major to its relative minor, A Minor. The two scales shares the same notes, so if you have used the Scale&Chords player in the past, you would not expect to hear any difference when going from the home slot to slot 1. However, with ScaleSQ this is not the case because when moving to slot 1, the player will "translate" the original melody into a new melody where the root is now A instead of C, the fifth degree is E instead of G, and so on. This is shown in the example below.

Home Slot "C Major" selected

Original melody

Slot 1 "A Minor" selected

"Translated" melody
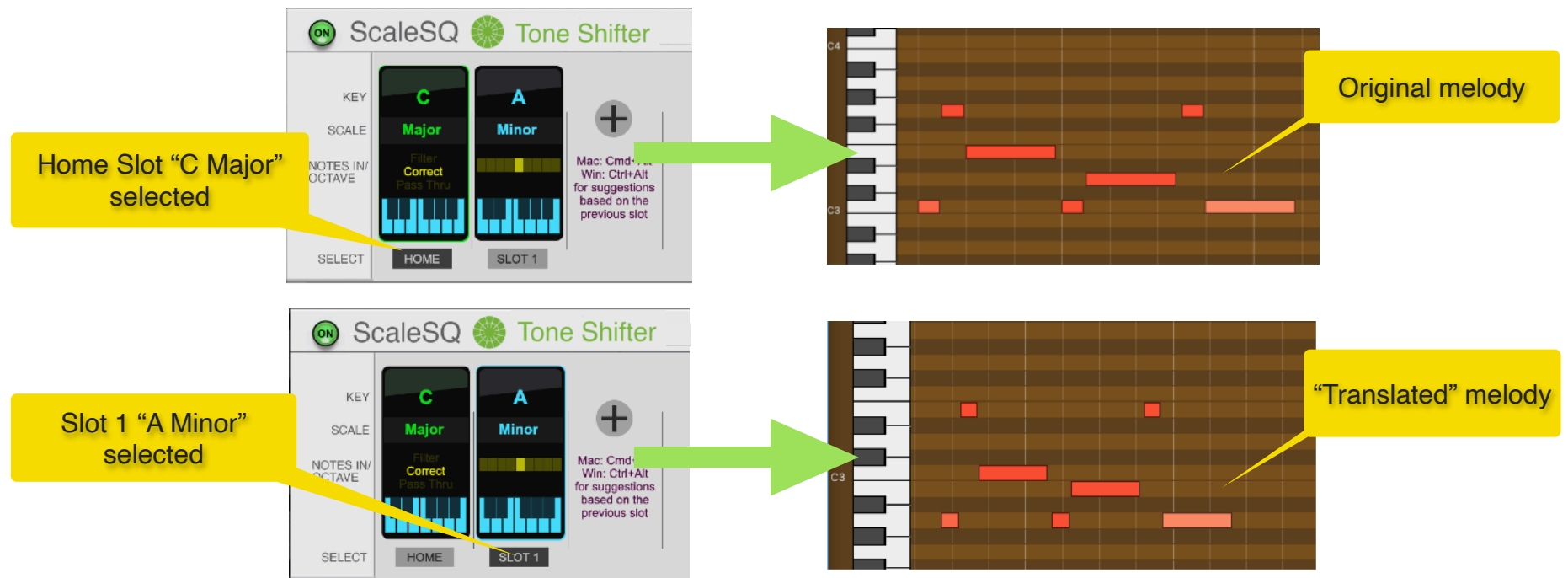
3.2 Setting the home slot

When creating an instance of the player in its default state, the home slot is the only one active with default values. You should set here the key and scale that match your song. Furthermore, you have the option to set the Note In mode, which determines how incoming notes are treated by the player. If "Pass Thru" is active, all notes pass through unaffected. If "Correct" is active, notes not in the key/scale are corrected to match the chosen scale. If "Filter" is active, notes not in the scale are filtered out.
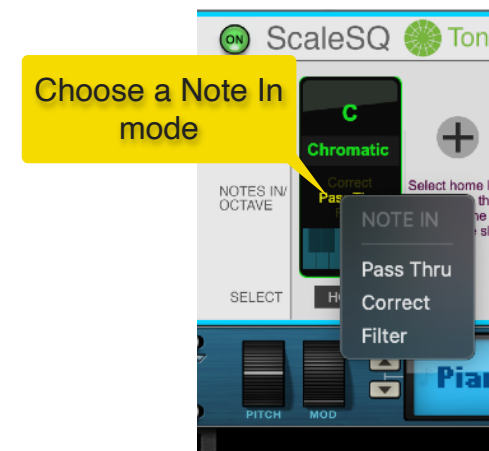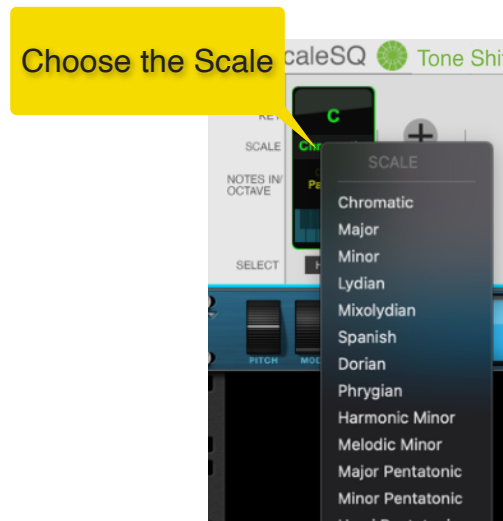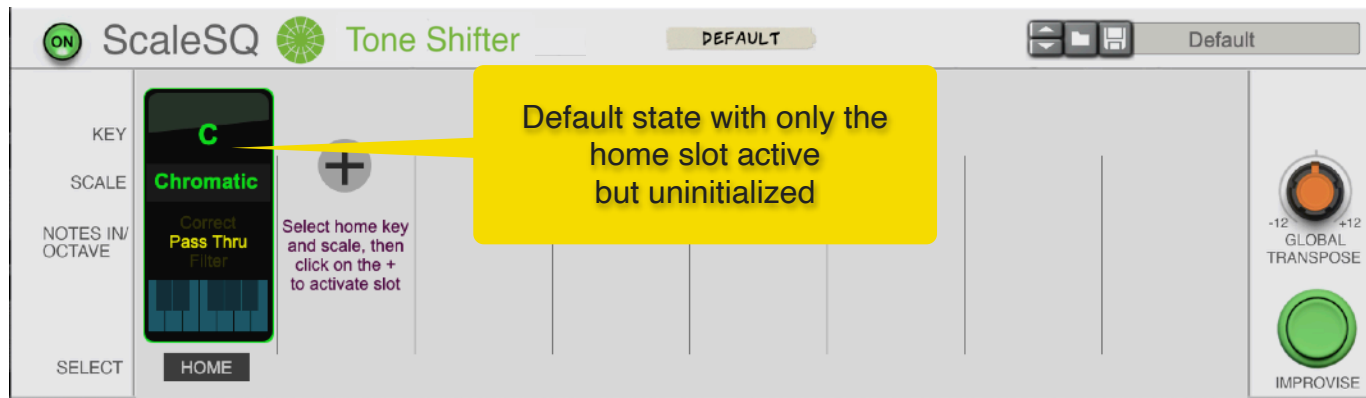
With only the home slot active, the player can be used as basic note correction or filtering tool. One significant advantage of ScaleSQ compared to other similar players is that you can sync several devices together, with one set as the main sender and the others in receive mode. The details of Send and Receive mode will be discussed in a later section.


Note Correction: Sender

Note Correction: Receiver

Sync **Out** from Sender connected to sync **In** of Receiver

Receive mode switched **On**
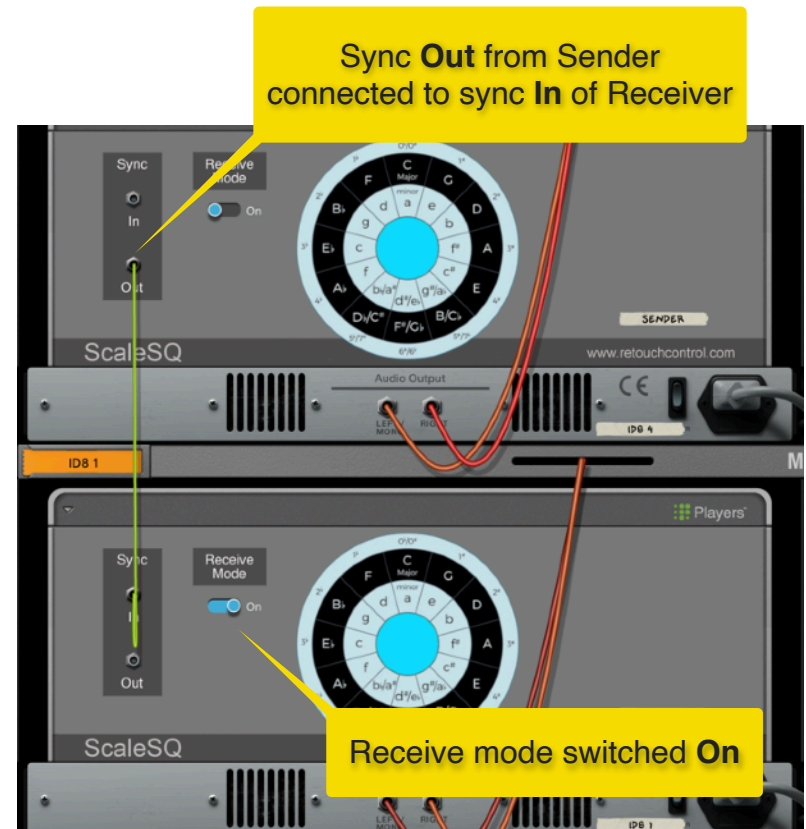
3.3 Activating the first modulation slot

Once the home slot is configured with a key and scale, you can add up to 7 modulation slots. If you click on the + sign, a menu will open with several categories of modulation options. In most cases you have *Diatonic*, *Parallel* and *Chromatic* modulations. For the major, minor, and the Greek modes, you also have *Circle of Fifth* and *Color Shift* modulations.

These suggestions are based on the settings of the home slot. If you look at the menu, you will see the label "HOME ->" to indicate that. There is another modality for the suggestions which will be covered in the next section.

If you don't want to choose from the suggestions but want to activate the slot in its default state, then you can press "Shift" and click on the + sign. Then you can choose whichever key and scale you prefer.
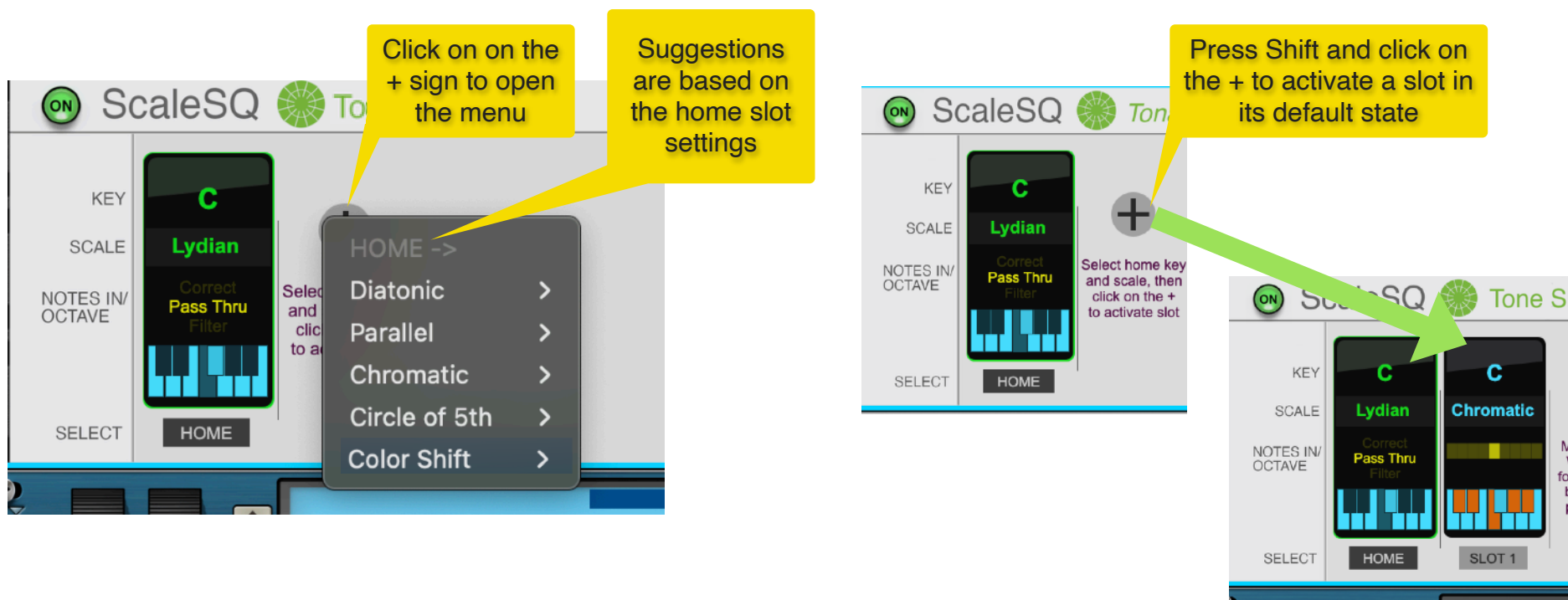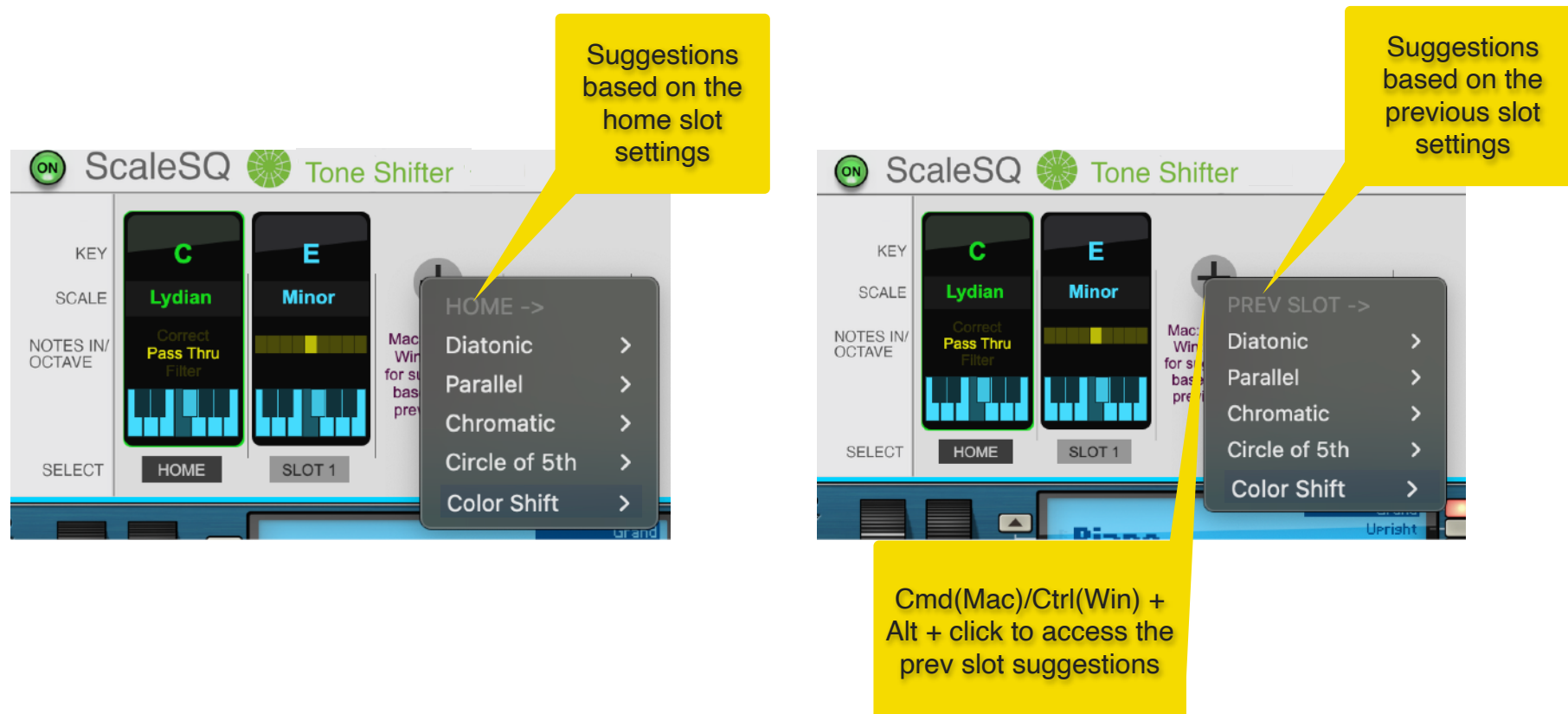
3.4 Activating the next modulation slot

If you already have one modulation slot active, there are two possible sets of suggestions when activating the next one.

The first set of suggestions is the same as before, based on the key and scale of the home slot and it is indicated by the "HOME ->" label in the pop up menu.

The second set is based on the key and scale of the previous slot and it's labeled as "PREV SLOT ->". You can access it by pressing Cmd(Mac)/Ctrl(Win) + Alt and then clicking on the + sign.

Suggestions based on the home slot settings

Suggestions based on the previous slot settings

Cmd(Mac)/Ctrl(Win) + Alt + click to access the prev slot suggestions

3.5 About the suggestions engine

The suggestions engine presents various options based on common techniques for modulation. These are explained in a bit more detail below using as starting point the familiar C Major scale.

3.5.1 Diatonic

The notes in the diatonic suggestions are the same as the notes in the original key&scale, the only difference is that the starting note is shifted. This produces a change in the interval pattern which in turn produces a shift in the "feel" or "color" of the scale. In the case of the Major scale, these "modes" are known by their Greek names, "Dorian", "Phrygian", "Lydian", etc.

The same principle can be applied to other scales as well. One can derive modes for any scale by shifting the starting note. These modes in ScaleSQ are simply named "Mode1" for mode 1, "Mode 2" for mode 2, etc. as shown here for the Neapolitan Major scale.

3.5.2 Parallel

The notes in the parallel suggestions are derived by applying the interval pattern of the modes of the diatonic suggestions, but keeping the root the same. In the case of C Major, this means applying the interval pattern of the Dorian, Phrygian, Lydian modes, etc. but keeping as root the note C.

The notes generated this way won't be the same as the original scale, so expect a more distinct change when doing parallel modulations.
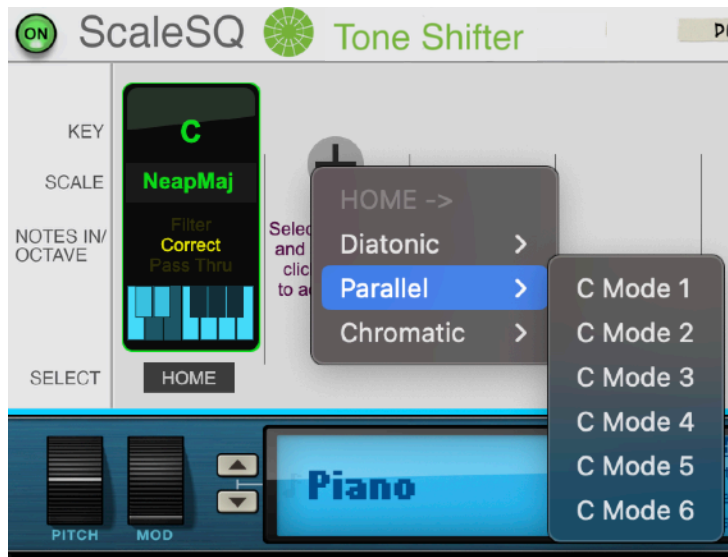
The same principle can be applied to other scales as well. These modes in ScaleSQ are simply named "Mode1" for mode 1, "Mode 2" for mode 2, etc. as shown here for the Neapolitan Major scale.

3.5.3 Chromatic
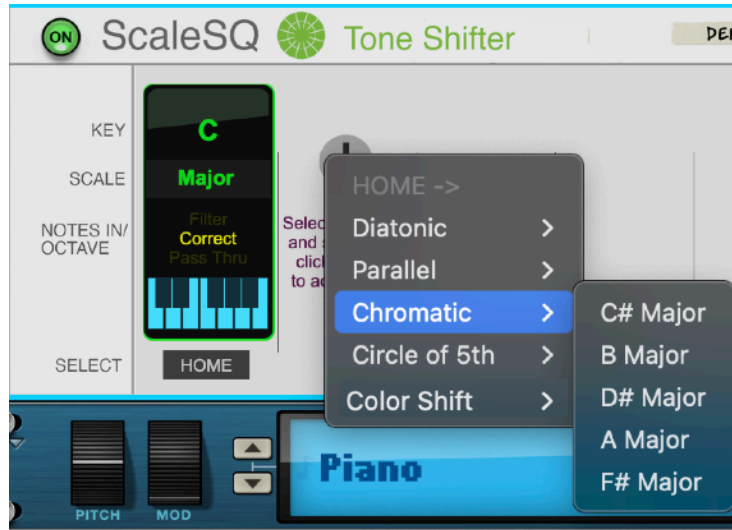
The notes in the chromatic suggestions are derived by pitch shifting all the notes by a certain number of semitones. One such example is going up a tritone when modulating to F# Major from C Major.

The notes generated this way won't be the same as the original scale, so expect a more distinct change when doing chromatic modulations.

Please keep in mind that in ScaleSQ, when doing the pitch shift, some of the notes might be adjusted to a lower or higher octave if they fall too far from the original incoming notes.


The same principle can be applied to other scales as well, as shown here for the Neapolitan Major scale.

3.5.4 Circle of Fifth and Color Shift
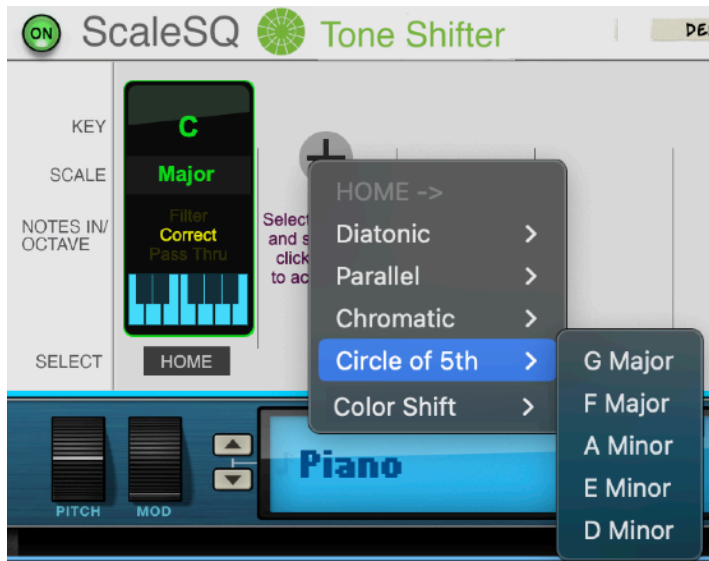
The notes in the Circle of Fifth suggestions are derived by moving clockwise and counterclockwise in the circle of fifths diagram. These are both Major and Minor scales which have almost the same notes as the starting scale. In the case of C Major, going clockwise there is G Major, and going counterclockwise there is F Major. Similarly, moving in the inside circle we have A Minor, and then E Minor clockwise, and D Minor counterclockwise.
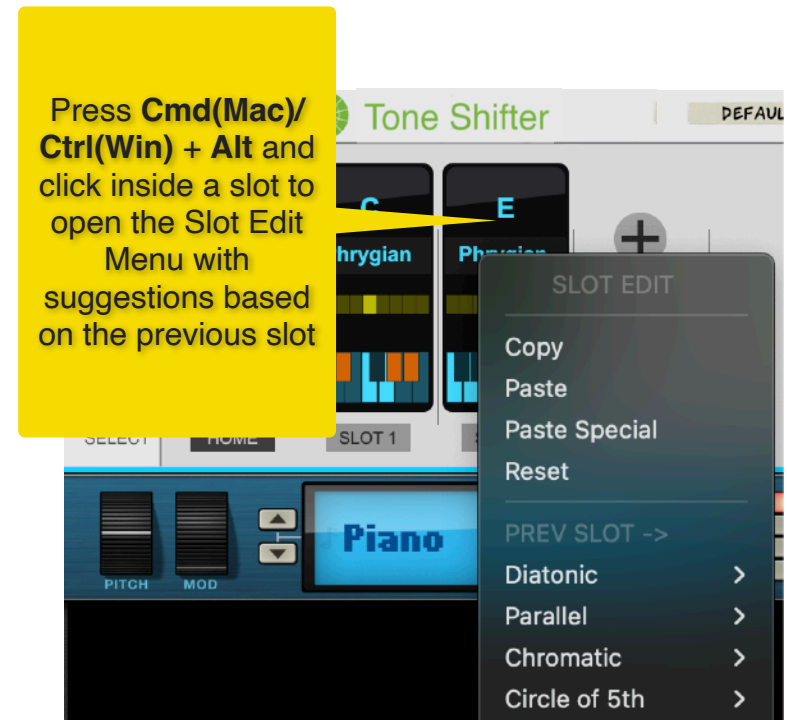
The notes generated this way will be similar to the starting scale which makes for smooth transitions, and this is why these modulations are commonly used by musicians.
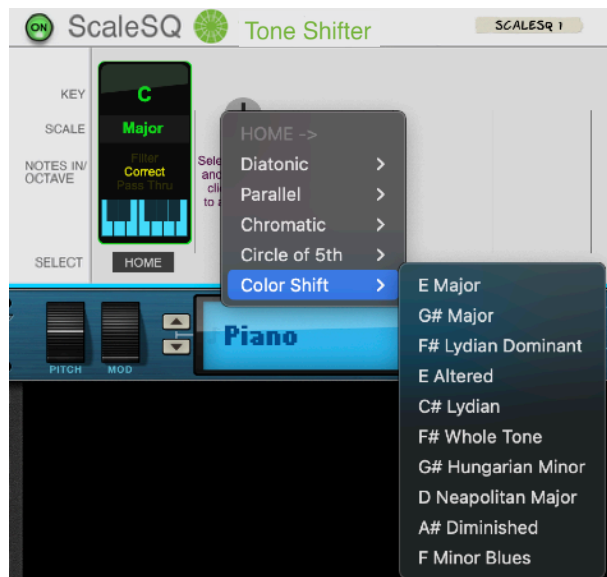
The notes in the Color Shift suggestions are derived by applying key and scale combinations which provide a distinctive shift in mood or color, a bold departure, a dramatic change, or a sheer surprise factor.

3.6 Slot editing

This section will cover some useful editing function when working with modulation slots. Most of these functions apply to the home slot as well.

Press **Alt** + click inside a slot to open the Slot Edit Menu with suggestions based on the home slot

Press **Cmd(Mac)/ Ctrl(Win) + Alt** and click inside a slot to open the Slot Edit Menu with suggestions based on the previous slot
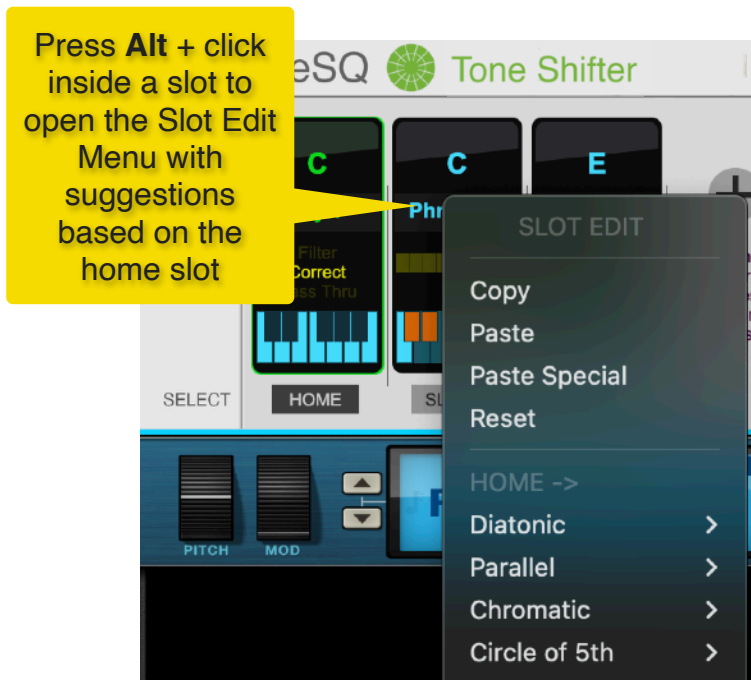
Here are some details about the various editing options for Copy, Paste, Paste Special, and Reset.

SLOT EDIT

Copy — Copy all settings for this slot into memory

Paste — Paste the settings stored in memory in this slot

Paste Special — Copy all settings for this slot into memory while pasting into this slot the values currently in memory

Reset — Reset all values for the slot. If this is the last active slot, inactivate it

HOME ->

Diatonic   >
Parallel   >
Chromatic   >
Circle of 5th   >
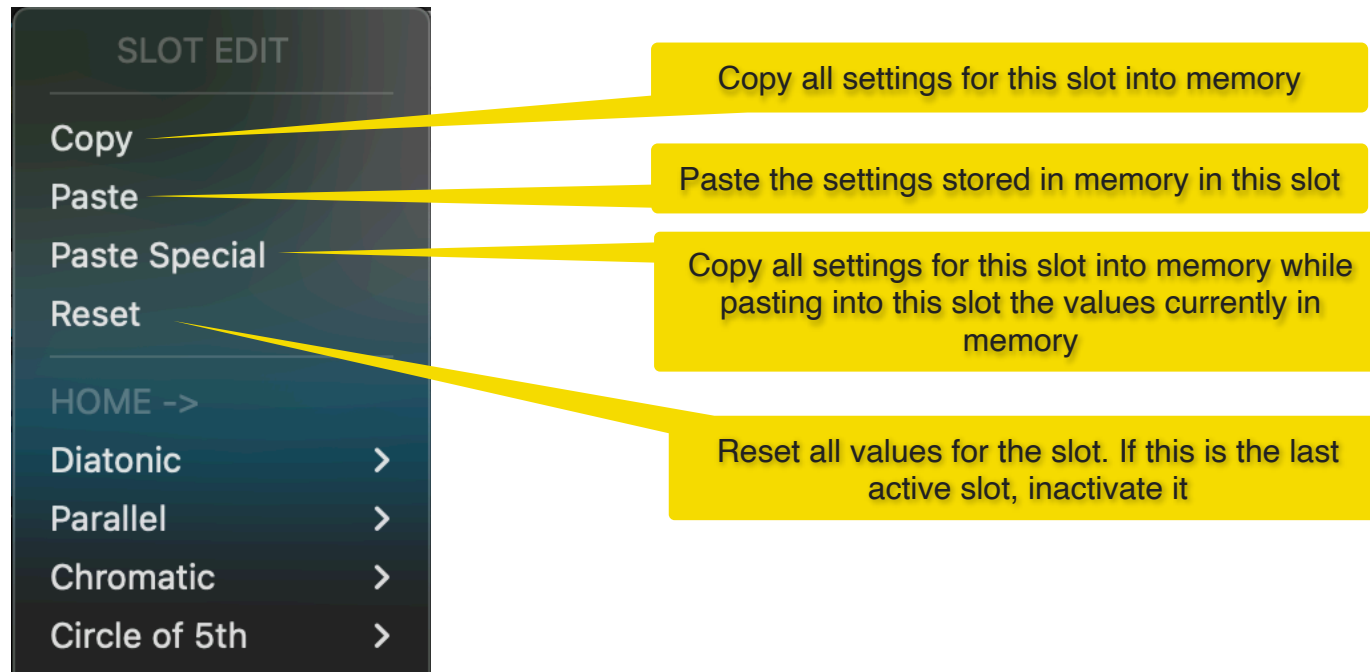
Modulation slots can be transposed by octave, from -4 to +4 octaves. If the incoming notes are already quite high or quite low, the notes will only be transposed if they remain within the working range in Reason.

Each slot has a keyboard visual to help you see which notes are in common and which aren't between the home slot and the modulation slots. Notes in light blue are in common, while notes in orange are not in common.
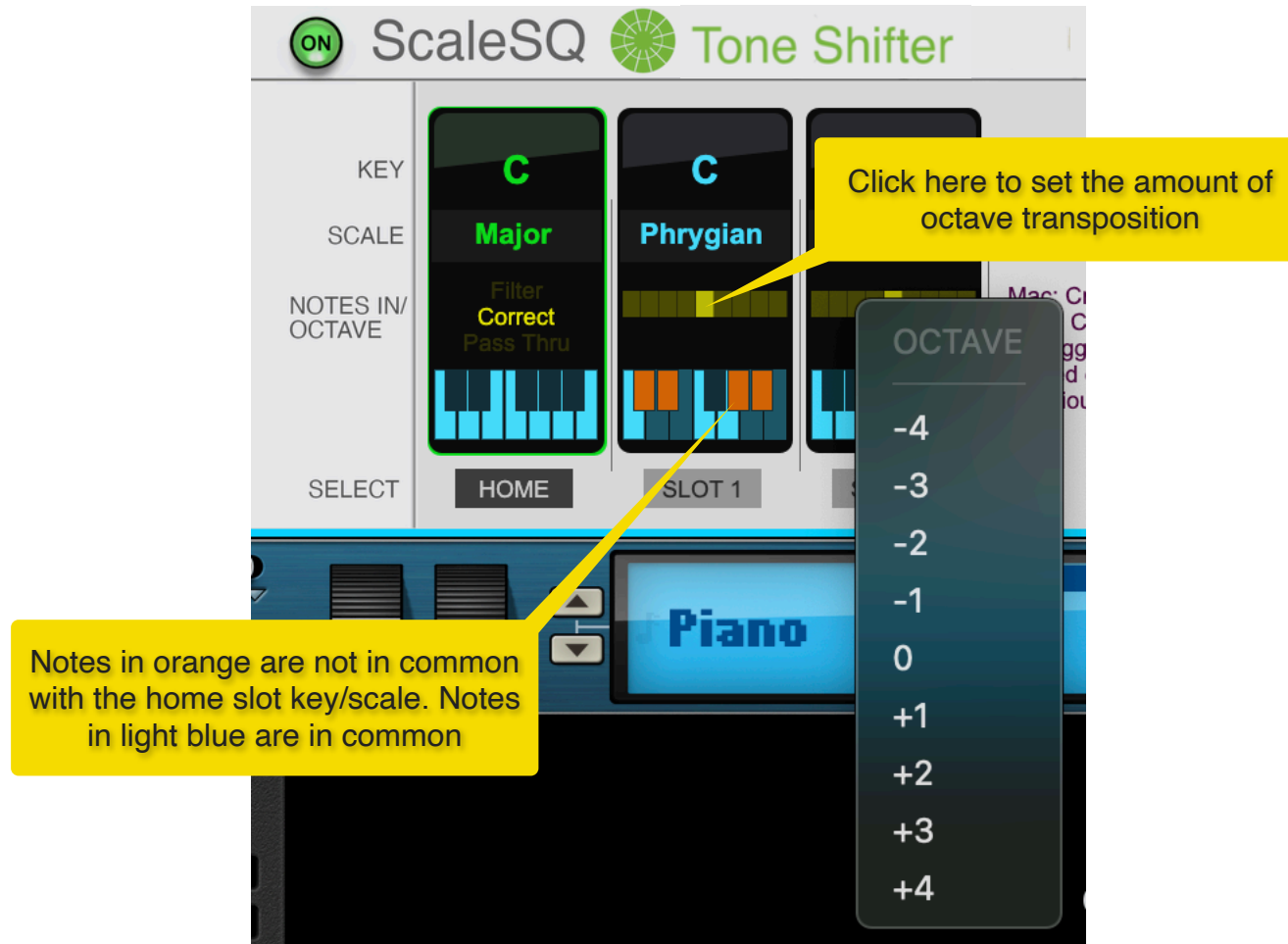
The player uses the Cmd + click paradigm to reset parameters, as shown below.
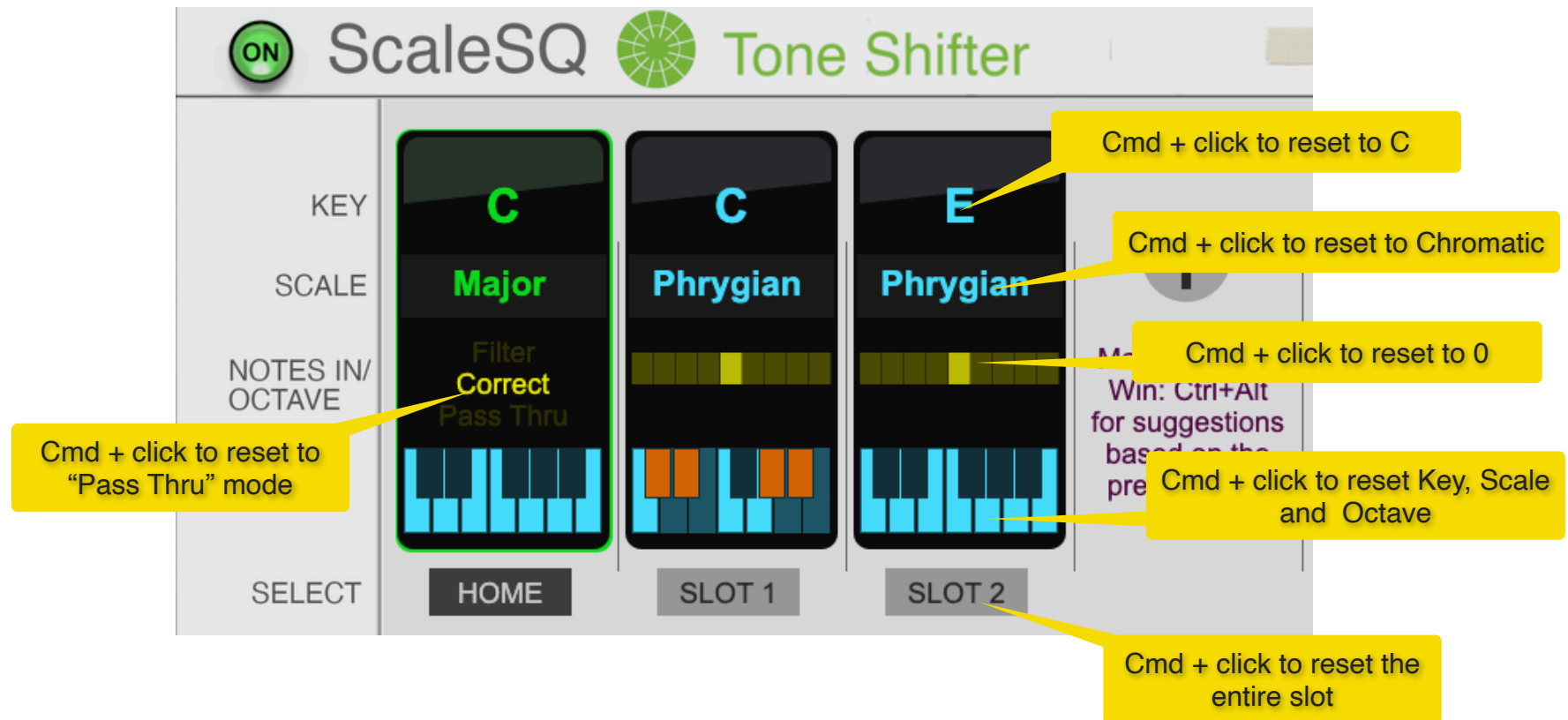
3.7 Slot selection and automation

To change modulation slots, just click on the select button corresponding to the desired slot. These changes can be automated in the Reason sequencer or inside a DAW when using the Reason Rack. If you are automating inside Reason, you need to create a track for ScaleSQ first as shown below.

Alt + click on the "SELECT" label to create an automation lane for the slot selection.
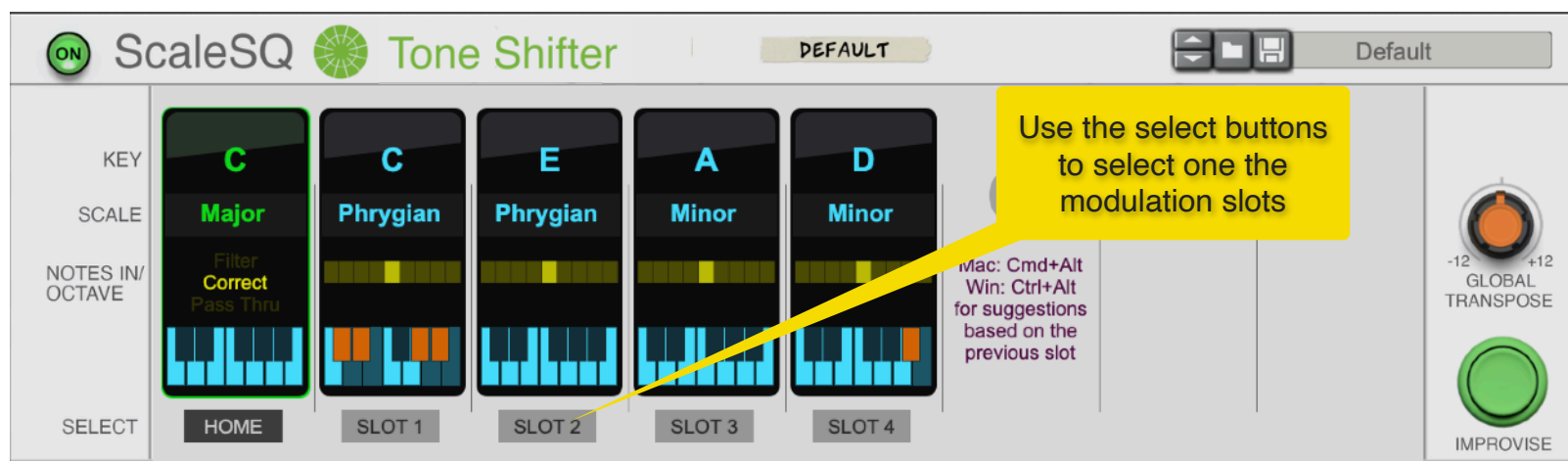
Alt + click on the "SELECT" label to automate the slot selection
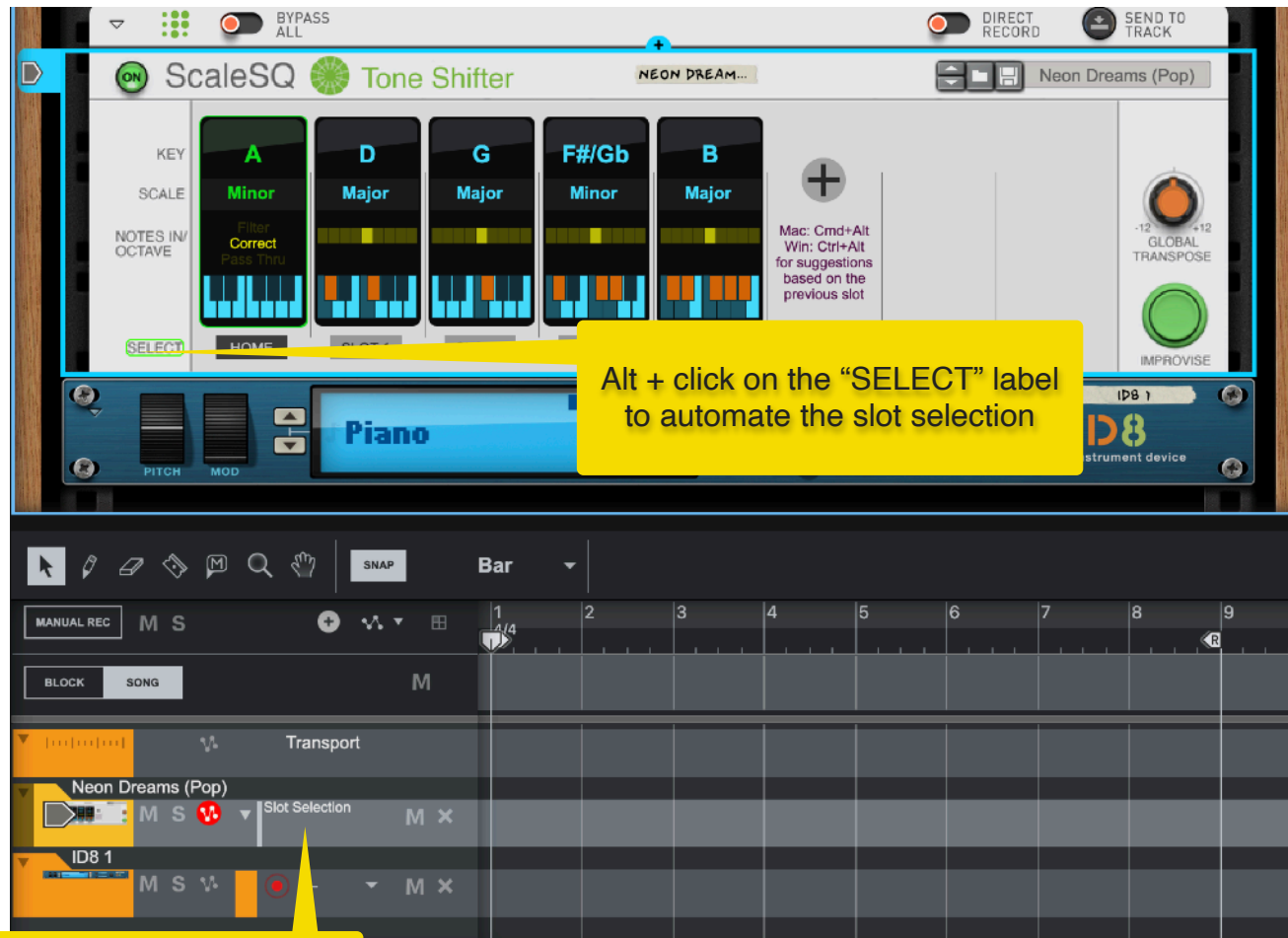
A track is created in the sequencer with an automation lane for the slot selection

In this example, the Slot Selection is automated inside Ableton Live. You first need to "configure" the parameter in Live by going to the Reason Rack as shown on the next page.

Automating the slot selection inside the Reason Rack in Ableton Live

Follow the instructions below to configure ScaleSQ for automation in Ableton Live.

Step 2: click on one of the Slot Select buttons to add it to the automation parameter list

Step 1: click on the Configure button for the Reason Rack Plugin

3.8 Global Transpose and Improvise

Turn the knob to shift the outgoing notes by semitone ranging from -12 to +12

Press the improvise button to randomly jump to one of the available slot. When released, the previously selected slot becomes active again
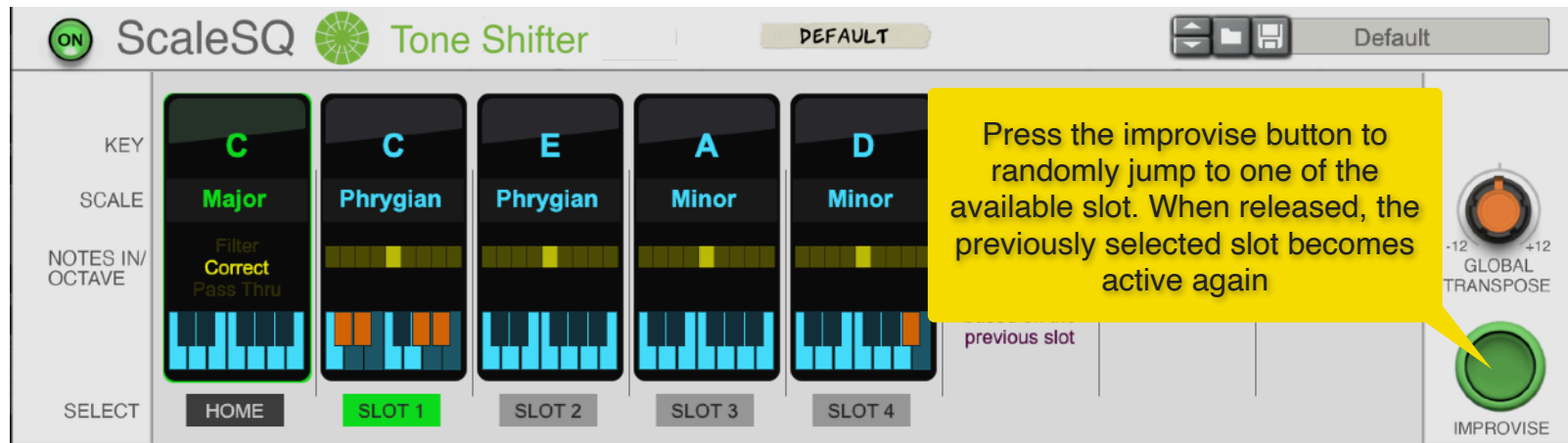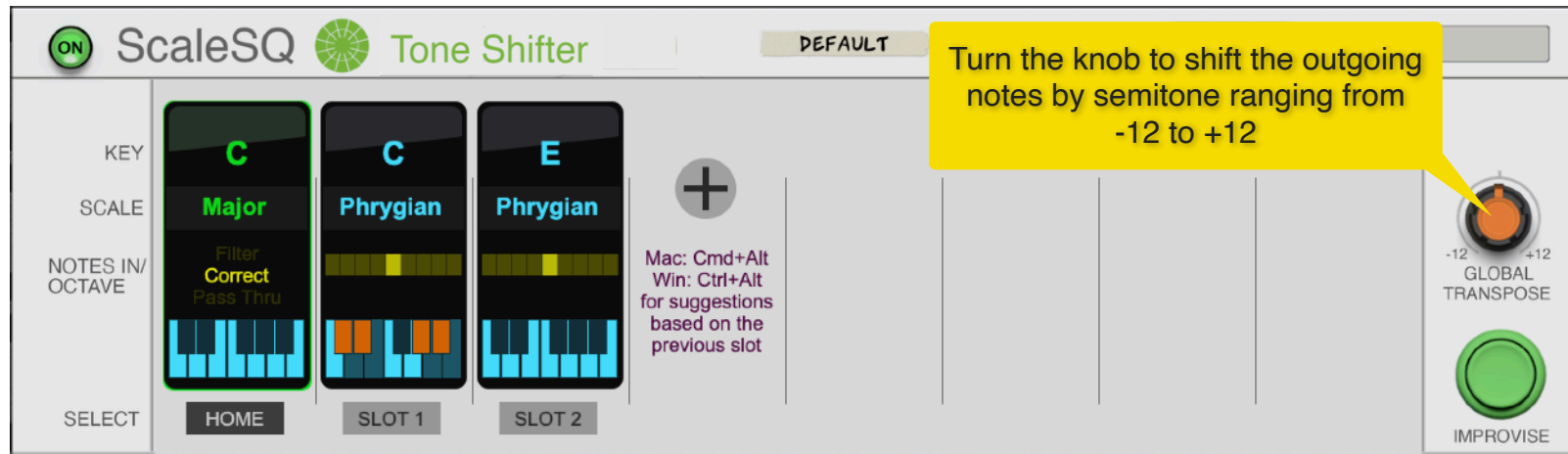
3.9 Send and Receive modes via CV

It is possible to connect multiple device in a daisy chain so that one main device in Send mode will send the slot information to the other devices connected via CV. This way you'll have multiple instances all synchronized and controlled from one device.

Sync out from Sender connected to sync in of Receiver

Receive mode switched On

Instance in Receive mode syncs to the same settings as the Sender
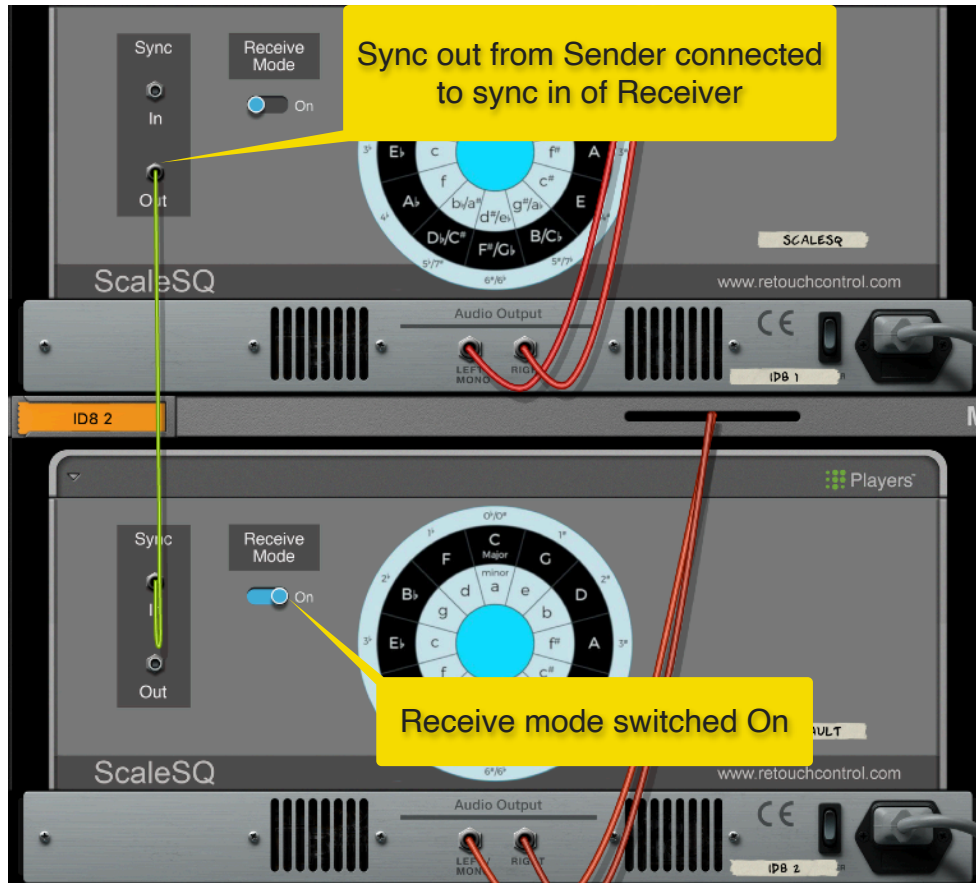
You can daisy chain multiple devices together as shown below.

First device in Receive Mode connected directly to the Sender

Second device in Receive mode connected to the first device in Receive mode
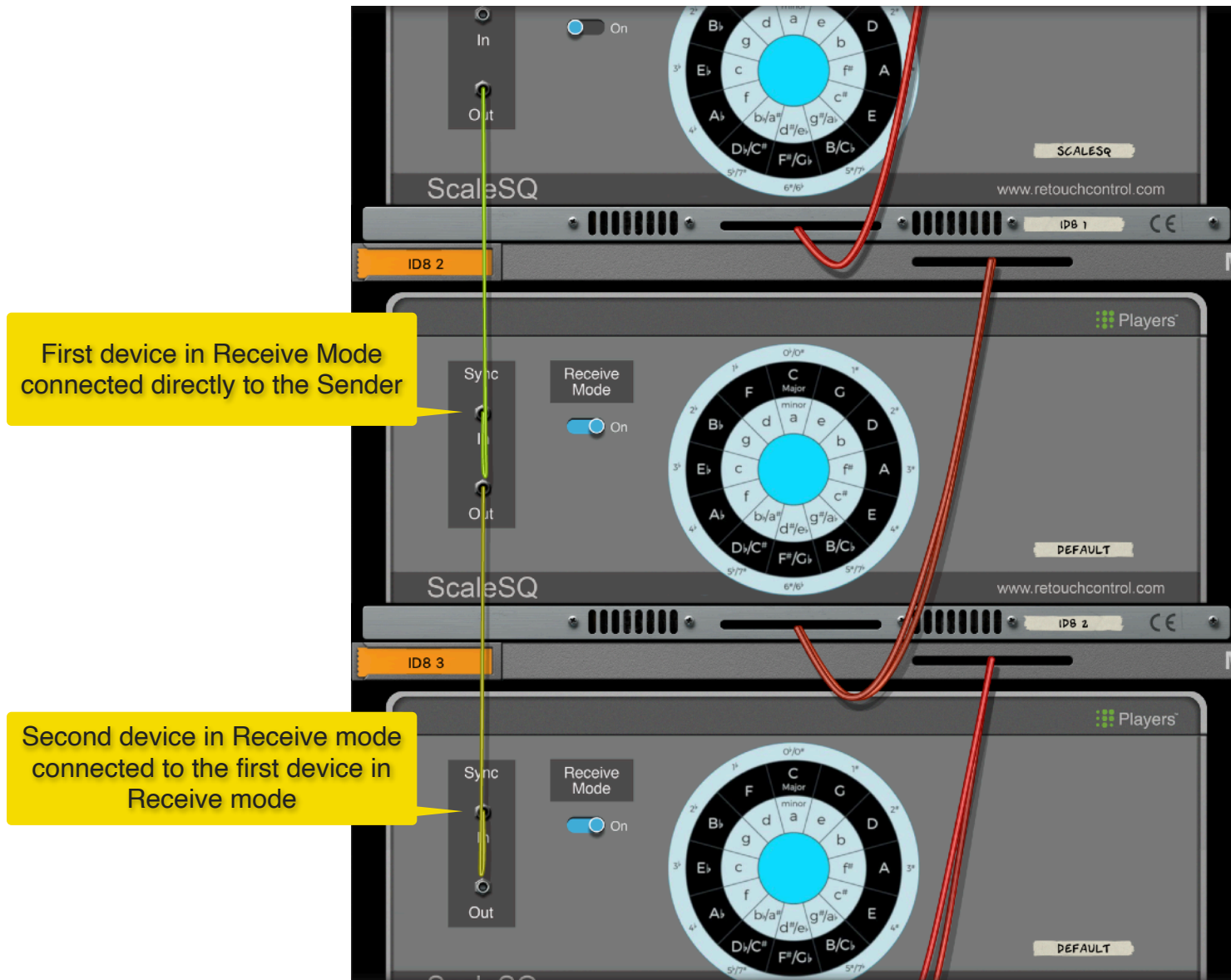
4. MIDI Implementation

MIDI CC - Parameter

[4] = Slot Selection
[5] = Global Transpose
[7] = Note In Mode
[8] = Home Key
[10] = Home Scale
[12] = Octave shift slot 1
[13] = Octave shift slot 2
[14] = Octave shift slot 3
[15] = Octave shift slot 4
[16] = Octave shift slot 5
[17] = Octave shift slot 6
[18] = Octave shift slot 7
[19] = On/Off

5. Remote Implementation

To obtain the complete list of all the available parameters which are controllable via Remote, use the "Extract Device Remote Info" from the File menu in Reason.

Scope				
Manufacturer	Model			
Retouch Control	com.retouchcontrol.ScaleSQ			
Remotable	Min	Max	Input type	Output type
Slot 1 Octave	0	8	Value	ValueOutput
Slot 2 Octave	0	8	Value	ValueOutput
Slot 3 Octave	0	8	Value	ValueOutput
Slot 4 Octave	0	8	Value	ValueOutput
Slot 5 Octave	0	8	Value	ValueOutput
Slot 6 Octave	0	8	Value	ValueOutput
Slot 7 Octave	0	8	Value	ValueOutput
OnOff	0	1	Toggle	ValueOutput
Note In Mode	0	2	Value	ValueOutput
Home Key	0	11	Value	ValueOutput
Slot 1 Key	0	11	Value	ValueOutput
Slot 2 Key	0	11	Value	ValueOutput
Slot 3 Key	0	11	Value	ValueOutput
Slot 4 Key	0	11	Value	ValueOutput

Slot 5 Key	0	11	Value	ValueOutput
Slot 6 Key	0	11	Value	ValueOutput
Slot 7 Key	0	11	Value	ValueOutput
Home Scale	0	31	Value	ValueOutput
Slot 1 Scale	0	31	Value	ValueOutput
Slot 2 Scale	0	31	Value	ValueOutput
Slot 3 Scale	0	31	Value	ValueOutput
Slot 4 Scale	0	31	Value	ValueOutput
Slot 5 Scale	0	31	Value	ValueOutput
Slot 6 Scale	0	31	Value	ValueOutput
Slot 7 Scale	0	31	Value	ValueOutput
Slot Select	0	7	Value	ValueOutput
Improvise	0	1	Toggle	ValueOutput
Global Transpose	0	24	Value	ValueOutput

6. Version History

Version 1.0.5:
Added: Alt+click on the SELECT label to create an automation lane for the slot selection
Added: On/Off to the automation list
Fixed: Display bug when changing the application zoom level

Version 1.0.0: initial release