

USER MANUAL



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MANUAL

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Thank you for purchasing CMI V!

This manual covers the features and operation of Arturia's **CMI V**, the latest in a long line of incredibly realistic virtual instruments.

Make sure to register your software as soon as possible! When you purchased CMI V you were sent a serial number and an unlock code by e-mail. These are required during the online registration process.

Special Messages

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications without notice or obligation to update the hardware that has been purchased.

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 level or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

Introduction

Congratulations on your purchase of Arturia's CMI V!

We'd like to thank you for purchasing CMI V, our latest virtual model of a legendary electronic instrument.

CMI V is the newest addition to our extensive family of instruments that recreate hard-to-find synthesizers and classic keyboards.

When talking about electronic music instruments of the 1980s, Fairlight CMI is one of the most popular instruments and one of the first truly workstations which covers sampling, a synthesis engine as well as sequencing in one unit.

The Fairlight CMI was the dream of nearly every musician and producer - but in an all impossible price range.

Now it found its way back - affordable, easy-to-use and with legendary sound.

Make sure to visit the www.arturia.com website for information about all of our other great hardware and software instruments. They have become indispensable, inspiring tools for musicians around the world.

Musically yours,

The Arturia team

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1. WELCOME

1.1. What is CMI V?

The CMI V is a software recreation of the legendary Fairlight CMI IIX (short for Computer Musical Instrument). The Fairlight CMI was a digital sampler, synthesizer and audio workstation introduced in 1979 by the founders of Fairlight, Peter Vogel and Kim Ryrie. It was one of the earliest music workstations with a digital sampling synthesizer included. The Fairlight CMI rose to prominence in the early 1980s.

1.2. History of the original instrument

The second version of the Fairlight CMI which the CMI V emulates, was released at a price of nearly 32.000 \$ in 1982. It used 8-bit recordings. The system could handle a sample rate as high as 32 kHz and a maximum frequency response of 15 kHz. The CMI's popularity peaked in 1982 with Peter Gabriel's fourth album, where he used 64 kilobytes worth of samples of world music instruments and sequenced skippy-rhythm'd percussion. The CMI Series II is also credited as helping launch popular musical styles such as hip hop, techno and house. The Fairlight CMI IIX was built until 1985.

1.3. "Page R" and light pen on Fairlight CMI Series II

The popularity of Series II was in large part due to a new feature, Page R, their first true music sequencer. Page R helped the CMI become a major player in the world of music production. It expanded the CMI's audience beyond that of accomplished keyboard players. Graphically depicting editable notes horizontally from left to right, the music programming profession and the concepts of quantization and cycling patterns of bars where instrument channels could be added or removed were also born out of the Page R sequencer. The CMI II was a high-level composition tool that not only shaped the sound of the 80s, but the way that music was actually written. It was in competition with the Synclavier, too. Thankfully, Arturia's engineers have forged a truce on this controversial issue: They decided to emulate them both! See the Arturia website for information about the [Synclavier V](#).

1.4. Popular Fairlight CMI Musicians and Sound Designer

- Art of Noise
- The Beach Boys
- Kate Bush
- Depeche Mode
- Dire Straits
- Thomas Dolby
- Duran Duran
- Peter Gabriel
- Herbie Hancock
- Jan Hammer
- The Human League
- Michael Jackson
- Jean Michel Jarre
- Howard Jones
- Nik Kershaw
- Mike Oldfield
- Alan Parsons
- Pet Shop Boys
- Prince
- Ryuichi Sakamoto
- Scritti Politti
- Tears for Fears
- Kim Wilde
- Stevie Wonder
- Yazoo
- Yello
- Yellow Magic Orchestra
- Yes
- Hans Zimmer

1.5. What does CMI V add to the original?

The limited sampling quality was expanded to 44.1 kHz and 16 bit, also the length of imported samples can be up to 30 seconds.

The graphic user interface was adapted to the needs of a current music producer. That means full MIDI compatibility and integration in audio sequencer environments.

The available instrument slots were increased to 10.

CMI V also adds a mixer with a bunch of effects that can be used on every single channel as well as in the Master output bus. The included effects are:

- Analog Chorus
- Delay
- Analog Delay
- Phaser
- Pitch Shift
- Leslie
- Flanger
- EQ
- Compressor
- Limiter
- Destroy
- Distortion
- Auto Pan
- Reverb

2. ACTIVATION & FIRST START

CMI V works on computers equipped with Windows 7, 8 and 10 and macOS 10.10 or newer. You can use the stand-alone version or use CMI V as an Audio Units, AAX, VST2 or VST3 instrument.



2.1. Activate the CMI V license

Once CMI V has been installed, the next step is to register the software. The registration process will require you to enter the serial number and the unlock code you received with the product.

2.1.1. The Arturia Software Center (ASC)

With your CMI V, the ASC is automatically installed. If desired, you can download the ASC here:

[Arturia Updates & Manuals](#)

Look for the Arturia Software Center at the top of the page, and then download the version of the installer that you need for your system (Mac OS X or Windows).

Follow the installation instructions and then:

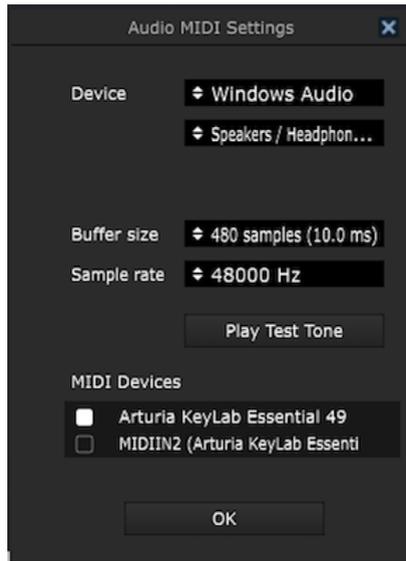
- Launch the Arturia Software Center (ASC)
- Log into your Arturia account
- Scroll down to the My Products section of the ASC
- Click the Activate button

That's all there is to it!

2.2. Initial setup

2.2.1. Audio and MIDI settings: Windows

At the top left of the CMI V application is a drop-down menu. It contains various setup options. Initially you will need to go to this menu and choose the **Audio Settings** option to get MIDI flowing in and sound flowing out.



*Audio and MIDI Settings window
-Windows OS*

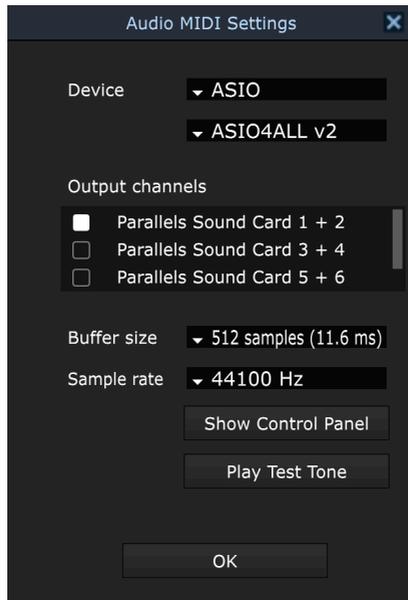
You will then see the Audio MIDI settings window. This works in the same way on both Windows and macOS, although the names of the devices available to you will depend on the hardware you are using.

Starting from the top you have the following options:

- **Device** lets you choose which audio driver you want to use to route sound out of the instrument. This might be your computer's own driver like Windows Audio, or an ASIO driver. The name of your hardware interface may appear in this field.
- **Output Channels** lets you select which of the available outputs will be used to route audio out. If you only have two outputs, only two will appear as options. If you have more than two you can select a specific pair of outputs.
- The **Buffer Size** menu lets you select the size of the audio buffer your computer uses to calculate sound. A smaller buffer means lower latency between pressing a key and hearing the note. A larger buffer means a lower CPU load as the computer has more time to think, but can result in a small latency. Find the optimum buffer size for your system. A fast, modern computer should easily be able to operate at 256 or 128 sample buffer size without creating pops or clicks in the sound. If you are getting clicks, try raising the buffer a little. The latency is displayed on the right hand side of this menu.
- The **Sample Rate** menu lets you set the sample rate at which audio is sent out of the instrument. The options here will depend on the capability of your audio interface hardware though even most computers' own hardware can operate at up to 48kHz which is perfectly fine. Higher sample rates use more CPU power so unless you have a good reason to go up to 96kHz, then 44.1k or 48k is usually fine.
- **Play Test Tone** helps you to troubleshoot audio issues by confirming whether sound can be heard through the correct device.
- The **Show Control Panel** button will jump to the system control panel for whatever audio device is selected.
- Your connected MIDI devices will appear in the **MIDI Devices** area. Click the check box to accept MIDI from the device you want to use to trigger the instrument. In standalone mode, Clavinet V listens for all MIDI channels so there's no need to specify a channel. You can specify more than one MIDI device at once.

2.2.2. Audio and MIDI settings: macOS

The process is very similar to initial setup for Windows and the menu is accessed in the same way. The difference is that macOS uses CoreAudio to handle audio routing and the audio device selection is made in the second dropdown menu. Apart from that, the options work the same way as described in the Windows section.



Audio and MIDI Settings window -macOS

2.2.3. CMI V as a plug-in

CMI V comes in VST2, VST3, AU and AAX plug-in formats for use in all major DAW software such as Cubase, Logic, Pro Tools and so on. You can load it as a plug-in instrument and its interface and settings work the same way as in standalone mode, with a couple of differences.

- The instrument will now synchronize to your DAW's host tempo/bpm. rate, when tempo is a factor.
- You can automate numerous parameters using your DAW's automation system.
- You can use more than one instance of CMI V in a DAW project. In standalone mode you can only use one at once.
- Any additional audio effects your DAW has available may be used to process the sound, including delay, chorus, filters, etc.
- You can route CMI V's audio outputs more creatively inside your DAW using the DAW's own audio routing system.

3. BASIC USER INTERFACE

CMI V has many great features, and in this chapter we'll give you a short introduction how to use the instrument. You will be amazed at how quickly CMI V provides you with sounds that are inspiring and perfect for all sorts of musical projects. It is also really easy to work with: just a few tweaks here and there and suddenly you are in a new world of sound. That will always be the main focus of every Arturia product: *Unleashing your creativity while remaining easy to use.*

3.1. The Virtual Keyboard & Macro Control Unit



The virtual keyboard with controls

The Virtual Keyboard offers 61 keys (from C1 to C6) and allows you to play a sound without the need for an external MIDI device. Simply click on a virtual key to hear the currently selected timbre. You can also drag the cursor across the keys to hear a glissando. The CMI V can be velocity sensitive from an external MIDI keyboard or other MIDI device but the sound must be assigned to a velocity value. Beside the keyboard there are six sliders and six switches which offer macro controls for sound parameters. Depending on the loaded sound, the macro controls provide different parameters. Above the keyboard you find a macro control unit with eight sliders that control the following parameters by doing a positive offset to the basic parameter settings:

- Filter
- Sample Start
- Vibrato Speed
- Vibrato Depth
- Aux Level
- Attack
- Damping 1
- Damping 2

3.2. Mainframe, Screen & Terminal

On the basic user interface, the Mainframe unit and the terminal have no functionality. But they will give you an impression of how the original Fairlight CMI IIX looked. The Screen displays the actual sound parameters but doesn't allow editing. You have to click on the screen to enter the advanced screen.



The Mainframe with Screen

3.3. The Upper Toolbar

The Upper Toolbar that runs along the top edge of the instrument both in stand-alone and plug-in mode provides access to many useful features. The first seven of these options can be found by clicking on the CMI V menu at the very top left hand corner of the instrument window.



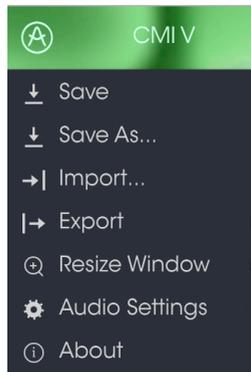
The Upper Toolbar

3.3.1. Save

The first option lets you save a sound program. If you have made a change to the program you are presented with a window to enter information about that program. You can name the sound, add an Author name, select a Bank and type, and select some characteristic tags that describe the sound. This information can be read by the Preset Browser and is useful for searching and finding presets. You can also enter freeform text in the Comments field which is handy for providing a more detailed description of your sound.

3.3.2. Save As

This works in the same way as the **Save** command, but lets you save a copy of the preset instead of saving over the original. It is useful for creating variations on patches but still keeping individual copies of each one.



The Toolbar Menu options

3.3.3. Import (Preset or Bank)

This lets you import a Preset or Bank file. Presets and Banks are stored in the **.cmix** format.

3.3.3.1. Export Preset...

You can export the current preset as a file using this command. Click **Export Preset** to open a popup window . It will ask you where you want to save the preset on your hard disk. Presets are stored in the **.cmix** format.

3.3.3.2. Export All Playlists

If you want to export all your Playlists, you can use this export function. Click Export, select **Export All Playlists** and a popup window will ask you where you want to save it on your hard disk. More about Playlists can be read in the chapter [The Preset Browser \[p.18\]](#).

3.3.3.3. Export Bank

This option is used to export the entire bank of sounds from the instrument. This is useful for backing up or sharing presets. Click Export, select **Export Bank** and a popup window will ask you where you want to save it on your hard disk.

3.3.4. Resize Window

CMI V's window can be resized from 60% to 200% of its original size without any negative visual artifacts. On a smaller screen such as a laptop you might want to reduce the interface size so it doesn't dominate the display. On a larger screen, or a second monitor, you can increase its size to get a better view of the controls. The controls all work the same at any zoom level but the smaller ones can be harder to see if you have shrunk the window down.

3.3.5. Audio Settings

Here you manage the way the instrument transmits sound and receives MIDI ([see section \[p.7\]](#) of this manual for full details).

3.3.6. About

Here you can view the CMI V software version, and developer credits. Click on the About window to close it.

3.3.7. Preset Browser Quick Look

Presets can be viewed by clicking on the Preset Browser button III\ on the left side of the Toolbar ([check this chapter \[p.18\]](#) for more information of this manual for full details). The All Types name field and left & right arrows < > in the toolbar also are used for preset selection.



3.3.8. Display Mode Buttons

3.3.8.1. Standard Panel Mode

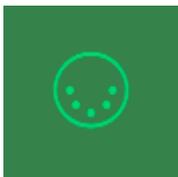
The Standard Panel Mode is a single panel with macro controls. All IO instrument slots are affected with these controls ([check this chapter \[p.10\]](#) of this manual for a deeper explanation of these controls).

3.3.8.2. Advanced Screen Mode (SCR)

The Advanced Screen Mode can be viewed by clicking on the SCR button at the top right of the Upper toolbar. This lets you access the Screen which controls each slot individually or in combinations. Click the SCR button again and you will return to Standard Panel Mode.



3.3.9. MIDI Learn Mode



The MIDI plug icon at the right hand end of the toolbar places the instrument into MIDI Learn Mode. Parameters that can be assigned to MIDI controls will be shown in purple and you can map physical MIDI dials, faders or pedals from your hardware units (like the Arturia BeatStep Pro or KeyStep) to specific destinations inside the instrument. A typical example might be to map a hardware MIDI expression pedal to the virtual Filter fader to control the overall filter of a sound program; or assign a button on a hardware controller to one of the switches so you can turn on/off a specific function.



The Toolbar MIDI menu options

When you click on a purple knob or button you will put that control into Listening Mode. Move a hardware dial, fader, or push a hardware button and the target goes Red to show that a link has been made between the hardware control and the software parameter. To unassign that parameter right-click (2-finger click on a Track Pad or Smart Mouse) on the red knob or parameter and it will return to purple. There is a pop-up window called MIDI Control Setup that displays which two things are being linked and a button to un-assign the two from each other.

The MIN (minimum) and MAX (maximum) value slider is used to restrict the parameter change range to something other than 0%-100%. For example, you might want the Main Level of an instrument to be controllable via hardware from 30% to 90%. If you made this setting (Min set to 0.30 and Max set to 0.90), your physical dial would not alter the volume any lower than 30% or any higher than 90% no matter how far you turned it. This is very useful for making sure you can't accidentally make the sound too quiet or too loud when performing.

To explain this, try these 5 use cases:

- Set MIN value to 0.0 and MAX value to 0.49 => the switch cannot be switched on because the 0.5 value can never be crossed.
- Set MIN value to 0.51 and MAX value to 1.0 => the switch cannot be switched off because the 0.5 value can never be crossed.
- Set MIN value to 0.0 and MAX value to 1.0 => the switch state changes when the fader crosses its central position.
- Set MIN value to 0.49 and MAX value to 1.0 => the switch state changes when the fader is very low.
- Set MIN value to 0.0 and MAX value to 0.51 => the switch state changes when the fader is very high.

The final option in this window is a button labeled **Is Relative**. It is required to activate it when using a relative controller, and to avoid using it with an absolute controller. Absolute and relative controllers send absolute and relative data respectively. When you move a physical relative controller, the parameter will start from its current position, sending either a “plus” or “minus” message. When you move a physical absolute controller, the controller sends a value between 0 (zero) and 127. The parameter will jump, not to 0 (zero), but will pick up the current value of the absolute controller.

3.3.9.1. Reserved MIDI CC Numbers

Certain MIDI Continuous Controller (MIDI CC) numbers are reserved and cannot be reassigned to other controls. These are:

- PitchBend
- Ctrl Mod Wheel (CC #1)
- Ctrl Expression (CC #11)
- AfterTouch
- Ctrl Sustain On/Off (CC #64)
- Ctrl All Notes Off (CC #123)
- Ctrl All Sounds Off (CC #120)

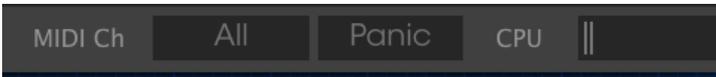
All other MIDI CC numbers may be used to control any assignable parameter in CMI V.

3.3.9.2. MIDI Controller Configs (Configurations)

MIDI Controller Configs are accessed at the far right hand side of the Upper Toolbar just to the right of the MIDI Plug icon. It's a small down-facing arrow drop-down menu. MIDI Controller Configs allow you to manage different sets of MIDI maps that you may have set up for controlling the instrument's parameters from MIDI hardware. You can copy the current MIDI assignment setup or delete it, import a configuration file or export the currently active one. This can be used to quickly set up different hardware MIDI keyboards or controllers with CMI V without having to build all the assignments from scratch each time you swap hardware.

3.4. The Lower Toolbar

At the right hand side of the Lower toolbar are three small items.



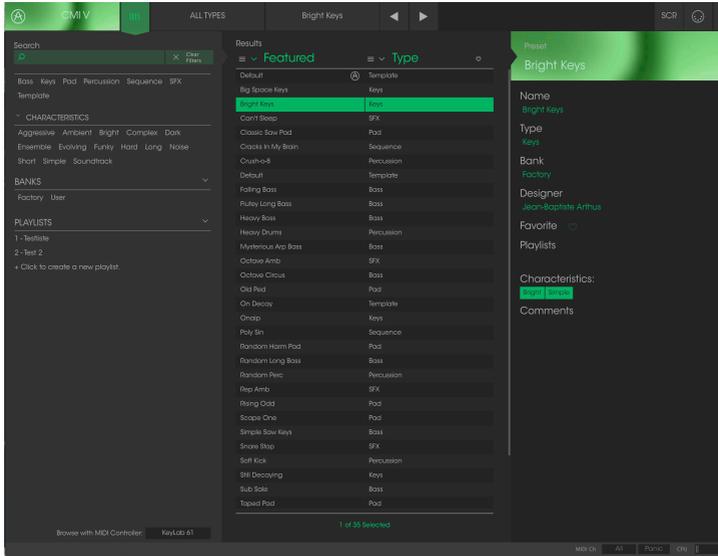
The Lower Toolbar

- The **MIDI Channel** button is a drop-down menu that assigns the MIDI channel to which CMI V will respond. The default shows the selection as ALL or you can select between MIDI channels #1-16.
- The **PANIC** button resets all MIDI signals in the event of stuck-on notes, and stops sounds from being generated.
- The **CPU** meter is used to monitor how much of your computer's CPU is used for processing.

At the left hand side of the Lower toolbar you will see a readout showing the parameter value of the control you are modifying.

3.5. The Preset Browser

The Preset Browser is how you search, load and manage Timbres/Sounds in CMI V. It has a couple of different views but they all access the same banks of presets. Click on the browser button III\ to access the search view.



The Preset Browser

3.5.1. Searching Presets

The Search display has a number of sections. By clicking on the **Search** field at the top left you can quickly enter any search term like "Pad" to filter the preset list by patch name. The Results column is updated to show the results of your search. Click on the X button in the search field to clear the search.

3.5.2. Filtering by using Tags

You can also search by using different tags. For example, clicking on the Lead and Organ options in the Types field you can show only presets that match those tags. The tag fields can be shown or hidden by using the small down arrow buttons in their title fields. Results columns can be sorted by clicking the same arrow button in their own section. You can use multiple search fields to perform narrower searches. So by entering a text search and also specifying Types, Banks and Characteristics options, you can see only the presets that match those exact criteria. Deselect any tag in any area to remove that criteria and widen the search without having to go back and start again. Using "CTRL + click" (Windows) or "CMD + click" (Mac) will allow you to select multiple elements in the same area. The second Results column can be switched to show Type, Designer or Bank, tags depending on how you like to search. Click on its options menu button just next to its sort arrow.

3.5.3. The Preset Info Section

The Preset Info column on the right of the search field shows information about any preset. If you want to make changes to a factory preset such as changing its name, adding comments or tags, you have to re-save it as a user preset using the Save As... command in the main CMI V Menu. When you have done this, the Info section will gain Edit and Delete buttons that you can use to change the information stored inside the preset. Factory presets can't be overwritten.

3.5.4. The Second Preset View

The menu next to the Search menu shows you a different view. The default view is ALL TYPES. The first option in this menu is called FILTER and will hold a record of whatever you have currently searched for in the Search field. So if you searched for Jazz in the main search area, those results will appear here. Selecting the ALL TYPES option in this column on the other hand will provide a list of all patches. The Categories shown beneath group sounds based on their Type like keys, pads, bass and so on. Clicking on the name field in the center of the Toolbar will show you a list of all available presets and will also change based on what you have entered in the Search field. So again if you have searched for "Jazz", this shortcut menu will only show you patches that match that tag. The left and right arrows in the Toolbar cycle up and down through the preset list as either the full list, or the filtered list if you have entered a search term.

3.5.5. Playlists

In the lower left corner of the Preset Browser window you find the Playlists feature. This is used to collect presets into different groups for different purposes, such as a set list for a particular performance or a batch of presets related to a particular studio project.

3.5.5.1. Add a playlist

To create a playlist, click the term "+ Click to create a new playlist". You should name the new playlist. It now appears in the Playlists menu. You can rename the playlist at any time; just click on the pencil icon at the end of its row.

3.5.5.2. Add a preset

You can use all of the options in the Search window to locate the presets you want to have in your playlist. Once you have found the right preset, click and drag it onto the playlist name. Click and drag from the Search Results list onto one of the playlists. To view the contents of a playlist, click on the playlist name.

3.5.5.3. Re-order the presets

Presets may be reorganized within a playlist. For example, to move a preset from slot 2 to slot 4, drag and drop the preset to the desired location. This will move the preset into the new location.

3.5.5.4. Remove a preset

To delete a preset from a playlist, click the x at the end of the preset row. Click the X to remove a preset from a playlist

3.5.5.5. Delete a Playlist

To delete a playlist, click the X directly to the right of the playlist name. A confirmation dialog pops up. You need to click OK before the playlist was finally deleted.

3.5.5.6. Browse with MIDI Controller

At the bottom of the left section you find a popup menu for selecting Arturia MIDI hardware to control the Preset browser. The following hardware is supported:

- KeyLab 25, 49, 61 & 88
- MiniLab & MiniLab mk II
- KeyLab Essential

4. INTRODUCTIONS TO THE ADVANCED SCREEN PANEL MODE

4.1. Opening Advanced Screen Panel mode

There are two ways to access the Advanced Screen Panel mode: either click on the SRC button in the upper panel of CMI V or click on the screen on the basic user interface. Either action will open the CMI V lid, revealing all of the original CMI parameters and a dazzling array of new ones.

In Advanced Screen Panel mode, you can make all settings regarding sound parameters, synthesis, instrument slot controls, sequencing and mixer/effects. Within the next chapters, all functions and parameters will be described in detail.



The Advanced Screen Panel window

4.2. Advanced Screen Panel mode: tabs

The Advanced Screen Panel mode window contains four tabs, each of which contains its own set of parameter pages.



Each tab has its own chapter, but here's a quick description:

4.2.1. SOUND Page Tab

The Sound page contains all parameters for sound editing. You can either manipulate loaded samples or go deeper with additive voice/harmonic editing.

4.2.2. SEQUENCER Page Tab

This page offers a simple but effective multi-track sequencer within the CMI V.

4.2.3. MIXER Page Tab

The Mixer page allows you to adjust the volume and panning for each of the 10 instrument slots. You can also add an effect to each of the slots. A master and an Aux channel is also available.

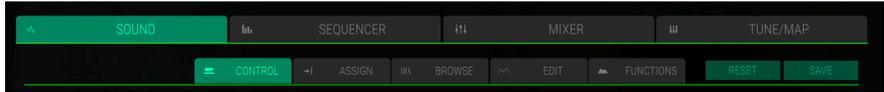
4.2.4. TUNE/MAP Page Tab

On this page, you can set up the tuning and keyboard mapping for each of the 10 instrument slots.

5. THE SOUND PAGE

The Sound page contains all parameters for sound editing. You can either manipulate loaded samples or go deeper with additive voice/harmonic editing.

Click on the **SOUND** tab in the upper toolbar of the Advanced Screen panel to enter the Sound page. If selected, you will find five more tabs to select different sub pages: **CONTROL**, **EDIT**, **ASSIGN**, **FUNCTIONS** and **BROWSE**.



The Sound Panel

Right beside these tabs you find two more buttons:

- **Reset** button: Click on this button to reset the selected slot. A loaded sample will be removed and all parameters on the Control page, the Edit page and the Functions page will be reset to their default values.
- **Save** button: Click on this button to save the current sound program with all settings. A Save window opens. Read more on this in the corresponding [chapter \[p.12\]](#).

5.1. Instrument Slots

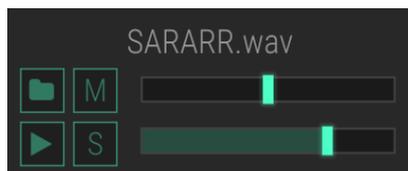
The instrument slots can be found at the bottom of the Sound page. Independent from the selected sub page, the instrument slots are always visible.



The 10 Instrument slots

Each sound program of the CMI V offers 10 instrument slots. Each slot can hold one sample/synthesis sound for playback. You can make different settings for each slot. To select a slot, just click on it. A selected slot is highlighted and the parameter sections above change to its actual settings. This allows you to build complex sound programs with up to 10 different samples and/or synthesis sounds.

Within an instrument slot, the following parameter are available:



- **Load (Folder symbol)** button: Click on this button to open a browser window where you can select any audio file on your hard disk and load it directly into the corresponding slot. You can also drag & drop an audio file from your computer hard disk directly onto an instrument slot. CMI V supports standard WAV and AIFF audio files with all established sample and bit rates. Also the original Fairlight preset format (version 4) ".VC" is supported.
- **Mute (M)** button: Click on this button to mute the current selected slot.
- **Solo (S)** button: Click on this button to solo the current selected slot. This mutes all other slots. You can set more than one slot into solo mode.
- **Trigger (Play symbol)** button: Click on this button to trigger note C3 of the corresponding slot. The loaded sample/synthesis sound is played with the defined Octave, Semitone and Fine pitch. Use this function to check a sample/synthesis sound or when no MIDI input device is available.
- **Panning** slider: Click on the upper slider and move it to the right or left to change the stereo panning of the corresponding slot.
- **Main Volume** slider: Click on the lower slider and move it to the right or left to change the main volume of the corresponding slot.



Keep in mind that Panning and Main Volume changes will also affect the corresponding parameter on the Sequencer, Mixer and Tune/Map pages in the same way.

5.2. Control Tab

Click on the **CONTROL** tab to open the Control page. Here you find all parameters regarding sample settings (Sampling mode) and harmonic editing (Time Synth and Spectral Synth mode). To select the corresponding mode, click on the desired button **Sampling**, **Time Synth** or **Spectral Synth** in the left screen section. In most cases, these pages use the same parameter.



The Control window in Sampling mode

5.2.1. Sampling Mode

In Sampling mode, a loaded sample can be edited in detail. Make sure to select the desired slot before editing the sample.

The waveform display shows the waveform of the sample that is loaded into the corresponding instrument slot. This window determines the time range of the waveform which is shown with a ruler over the waveform. To zoom in (decreasing the viewing range) click & drag down in the ruler. To zoom out (increasing the viewing range) click & drag up. Double-click onto the ruler to reset the zoom to the full waveform representation. To move forward or back along the timeline, click & drag left or right in the ruler. When a sample is triggered via MIDI note or trigger button, a pointer shows the actual position in the waveform. If the **FOLLOW** button below the waveform is activated, the waveform follows the playback over time.

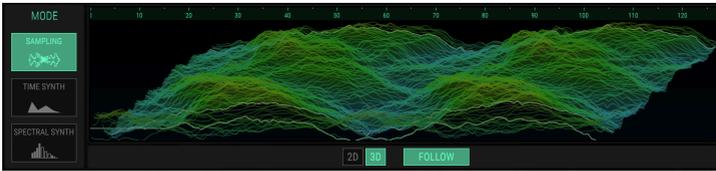


The Waveform display in Sampling mode 2D

You can change the waveform display from 2D to 3D. Click on the corresponding button under the waveform display to select the classic waveform (2D) or a three-dimensional realtime representation (3D) of the audio signal. You need to trigger the corresponding slot to see the full effect. Click in the 3D representation and move the mouse to turn the display as desired.



Keep in mind that the 2D/3D buttons are only available in Sampling and Time Synth mode.



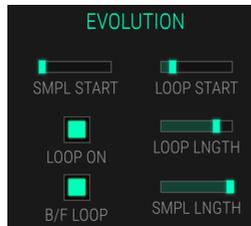
The Waveform display in Sampling mode 3D

You can change sample start (Smpl Start) by dragging the vertical bar with a triangle button at the top. The sample start parameter can also be found in the **Evolution** section.

You can change sample length (Smpl Lengh) by dragging the vertical bar at the end of the waveform with a triangle button at the top. The sample length parameter can also be found in the **Evolution** section.

You can also set the Loop Start point by dragging the left loop bracket with a triangle button at the bottom. The right loop bracket will move accordingly. Loop Length can be set by dragging and moving the right loop marker. LoopStart and Loop Length are quantized to the size of a segment. Keep in mind that **Loop On** in the **Evolution** section must be activated to hear the sample loop.

EVOLUTION



- **SMPL START** (Sample Start): Sets the sample start in number of segments (1 segment = 128 samples). This value can be modulated, e.g. by Velocity or any Control slider, which can bring a little life into sometimes static sounding samples. Since its value is only evaluated on note start, further modulations to this parameter while a voice is playing don't have any effect.
- **LOOP ON**: Activates the sample loop.
- **B/F LOOP** (Backward/Forward Loop): Toggles loop playback between forward (deactivated) and forward/reverse (activated).
- **LOOP START**: Sets the start pointer for the sample loop.
- **LOOP LNPTH** (Loop Length): Determines the loop length.
- **SMPL LNPTH** (Sample Length): Sets the sample length in number of segments (1 segment = 128 samples).

TUNE/FILTER



- **OCT** (Octave): Sets the pitch of the corresponding slot in steps of an octave. When used as modulation destination, it acts with continuous pitch.
- **SEMI**: Sets the pitch of the corresponding slot in semitone steps. The standard setting for this parameter is 0, but there are cases where different values are interesting as well, especially when combining different slots.
- **FINE**: Fine-tunes the corresponding slot in steps of 1/128th of a semitone. The audible result of detuned samples/harmonics played in combination is a Chorus-like effect. Use a positive setting for one slot and an equivalent negative setting for another, when working with similar samples/harmonics.
- **FILTER**: Determines how much the cutoff frequency depends on the MIDI note number. It follows the Root note, **OCT**, **SEMI**, **FINE** and global tuning settings. It also follows the pitch evolution when **PORTAMENTO** is active.
- **VOICE LEVEL**: Sets the volume for the corresponding slot.
- **AUX SEND**: Sets the Aux Send level for the corresponding slot. Read more about using AUX RETURN in the chapter [The Mixer Page \[p.46\]](#).

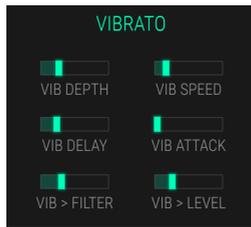
ENVELOPE



The envelope section controls the volume for the corresponding slot.

- **ATTACK**: Determines the time it takes for a signal to go from zero to maximum level, after it is triggered by a note.
- **DAMP MODE**: Switches between damping mode 1 and 2.
- **DAMPING 1**: Determines the final decay time of the signal from key release to silence. Keep in mind that setting **Damping** to 0 can cause a click at the end of the played voice.
- **DAMPING 2**: Only valid when **DAMP MODE** is set to 2. Determines the alternative decay time of the signal from key release to silence.
- **TRIG** (Trigger): If activated, both **Damping** parameters are ignored. The sound is always played until its end at maximum volume, when a key is held. If a loop is active, the sound plays endlessly. After releasing a key, the loop and playback stop.

VIBRATO



The vibrato effect is controlled by a triangle LFO and affects the pitch of the corresponding slot.

- **VIB DEPTH:** Sets the amount of the LFO on the pitch.
- **VIB SPEED:** Controls the rate of the LFO.
- **VIB DELAY:** Delays the LFO.
- **VIB ATTACK:** Sets the time it takes for the LFO to fade in after the **Vib Delay** time.
- **VIB > FILTER:** Applies vibrato to the filter.
- **VIB > LEVEL:** Applies vibrato to the Aux Return level.

PORTA/BEND



- **PORTAMENTO:** Activates portamento. This enables a linear pitch glide between the last played note and a new one.
- **GLISSANDO:** Activates Glissando. Here, portamento is quantized to semitones.
- **SPEED:** Sets the speed of the portamento/glissando.
- **CONST TIME:** When activated, the time to reach the next pitch is constant. Otherwise, the pitch/time is constant. Decide whether you want each glide to change pitch at the same rate, or have each glide take the same time to arrive at the final pitch.
- **BENDWIDTH:** Sets the range of Pitch Bend.

5.2.2. Time Synth Mode

In Time Synth mode, the display shows a basic evolution overview of the harmonics as audio waveform. Harmonics can be created by drawing or using the **ANALYSE** function on the **EDIT** page.



The harmonic display in Time Synth mode

Besides the Time synth harmonic display, the parameter sections are identical to Sampling mode.

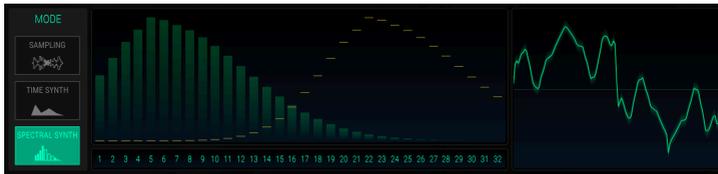
Further editing of the Time synth parameter is possible on the **Edit** page.

5.2.3. Spectral Synth Mode

In Spectral Synth mode, the spectral display shows a basic evolution overview of the harmonics which can be edited by using the corresponding parameter in the **Evolution** section. Further editing in the graphic display is only possible on the [Edit page \[p.32\]](#).

Right beside the spectral display a realtime oscilloscope display is shown. Here you can see the signal waveform, when the corresponding instrument slot is triggered.

Make sure to select the desired instrument slot before editing the harmonic display.



The harmonic display in Spectral Synth mode

The basic concept of working in Spectral Synth mode is some knowledge about additive synthesis. Classic additive synthesis occurs by starting with the simplest building block of all sound, the sine wave, and adding various harmonics of that sine wave. For example, a square wave can be constructed from a combination of sine waves. In Spectral Synth mode, up to 32 harmonics can be displayed and modified.

To become familiar with the Spectral Synth mode we recommend that you perform the following exercise:

- Select an empty instrument slot.
- Select the Spectral Synth mode by clicking on the **Spectral Synth** button.
- A curve with 32 harmonics is displayed.
- Click on the trigger button or play a note on your MIDI keyboard and listen to the harsh sound.
- Use the parameter slider in the **Evolution** section to change the shape of the harmonics and also the sound character.

Besides the Spectral Synth harmonic display, the only parameter section that differs from the Sampling and Time Synth mode is the **Evolution** section.

EVOLUTION

- **CENTER:** Determines the harmonic that provides the maximum amplitude, the so-called mean.
- **SPREAD:** Sets the volume of harmonics around the center harmonic.
- **BIAS:** Emphasises the harmonics below or above the mean, determined with the **CENTER** parameter.
- **FUND BOOST:** Sets the level of the basic tone (i.e., the fundamental).
- **WAVETABLE VOICE:** Here you can select the basic waveform that is used for the additive synthesis. In the pop-up menu, you can choose different harmonic waves as well as wavetables. The more complex a wave, the more complex the sound structure of the played result.



5.3. Edit Tab

Click on the **EDIT** tab to open the Edit page. Here you find further sample editing functions as well as the ability to do additive synthesis by drawing harmonics. You can also convert a sample to a harmonic profile by using FFT. Make sure to select the desired slot before editing the sample/harmonics.

 The Edit tab can't be selected when working in Spectral mode.



The Edit page in Sound mode

When working with a sample

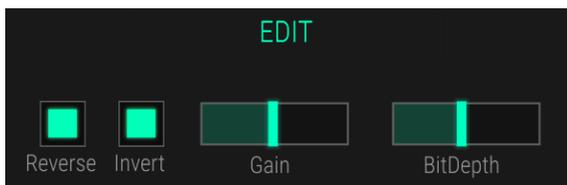
If a sample is loaded in the corresponding instrument slot, there are further parameters to modify it. The waveform display is identical to the display on the Sound Control page.



Click on the corresponding button under the waveform display to select the classic waveform display (2D) or a three-dimensional realtime representation (3D) of the audio signal. Keep in mind that you need to trigger the sample to see the full effect. When a sample is played via MIDI note or trigger button, a pointer shows the actual position in the waveform. If the **FOLLOW** button below the waveform is activated, the waveform follows the playback over time.

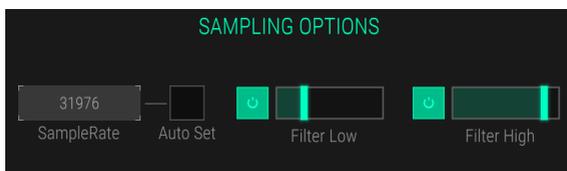


EDIT



- **Reverse:** Reverses the sample so that it sounds like playing a tape backwards. This effect will also be shown in the waveform display.
- **Invert:** Inverts the phase of the sample waveform. This effect will also be shown in the waveform display.
- **Gain:** Determines the level of a loaded sample. Gain reaches from -30 to $+18$ dB. Keep in mind that high gain settings can cause clipping. This effect will also be shown in the waveform display.
- **BitDepth:** Defines the bit resolution. A maximum setting of 16 gives the highest audio quality, while a setting of 1 creates mostly noise. This effect will also be shown in the waveform display.

SAMPLING OPTION

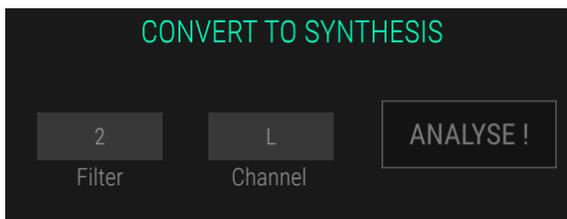


- **SampleRate:** Sets the sample rate for playback. The highest setting of 44100 Hz gives you the maximum playback quality. At lower settings, more and more of the information describing the original audio signal is eliminated, turning the signal into unrecognizable noise. Click on **Auto Set** to automatically set the best sample rate by analyzing the loaded sample. Changing the **Sample Rate** also changes the rate that is played by the keyboard. If **SEMI**, **OCT** and **FINE** are set to 0, triggering the root note key will play at the set Sample Rate.
- **Filter Low:** Sets the hipass filter cutoff frequency (from 18 Hz to 294 Hz). Higher values will cut off the lower frequencies. You can also deactivate this filter by clicking the bypass button. This effect will also be shown in the waveform display.
- **Filter High:** Sets the lowpass filter cutoff frequency (from 0.9 kHz to 12 kHz). Lower values will cut off the higher frequencies. You can also deactivate this filter by clicking the bypass button. This effect will also be shown in the waveform display.

CONVERT TO SYNTHESIS

You can turn a sample into harmonics by using the ANALYSE function. This makes a Fast Fourier Transformation (FFT) of the sample and re-constructs it with sine waves. These harmonics can be redrawn in the graphic display. The **SampleRate** parameter can be modified in order to achieve this and **Auto Set** selects a Sample Rate that works well for the analysis process.

For more information on how to edit harmonics please read the following section.



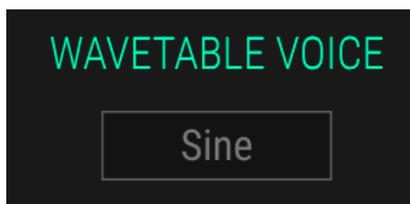
- **ANALYSE** button: Click on this button to turn a sample into harmonics. The analysis process treats the selected channels of the signal **L**, **R** or **L+R** which can be selected in the **Channel** pop-down menu.
- **Filter**: This function is used to filter out higher harmonics from the analysis process. A value of 0 has no effect while a maximum value of 7 has the greatest filtering effect. We recommend that you use the default setting of 2.

When working with additive harmonics

CMI V offers two different methods to work with harmonics. You can work in the classic additive way by using sine waves or you can use the wavetable mode by using more complex waves for sound generation.

You can either use an empty slot to do additive synthesis from scratch or you can analyse any loaded sample and turn it into an editable harmonic graph.

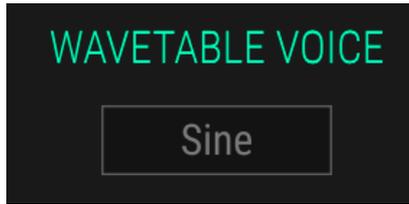
Classic additive synthesis occurs by starting with the simplest building block of all sound, the sine wave, and adding various harmonics of that sine wave. For example, a square wave can be constructed from a combination of sine waves. Up to 32 sine wave harmonic envelopes can be drawn, displayed, modified and computed. A harmonic envelope is similar in concept to the ADSR (Attack, Decay, Sustain, Release) envelope, but with much greater flexibility. If you want to work with that classic additive synthesis, you need to set **WAVETABLE VOICE** to one of the selectable harmonic sine waves.



Wavetable synthesis is more complex than the classic additive synthesis. You can also use other waveforms (saw, square, as well as sine) for the additive synthesis. Harmonic numbers now become segment numbers. These segments are played with crossfades one by one with a defined duration.

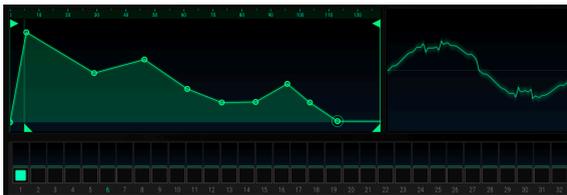
Wavetables are a collection of one or more waves. The playback sequence of the waves can be dynamically altered, which results in interesting sound transformations. If the waves in a wavetable are similar in shape, the result will sound smooth and pleasant. If, however, the shapes are completely different, result will have wild spectral changes and may sound harsh.

If you want to work with the wavetable synthesis, you need to set **WAVETABLE VOICE** to select the desired waveform.



When using the Time synthesis mode, the display changes from the regular waveform representation. Now you can draw harmonic envelopes by clicking with your mouse on a draw point and moving it up or down. You can also move the draw point to the left or to the right. This depends on the free space around the draw point. Click on an empty space to create new draw points, if desired. Right-click on a draw point to delete it.

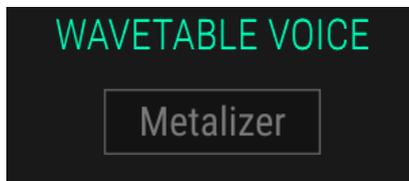
Right beside the harmonic display a realtime oscilloscope display is shown. Here you can see the signal waveform, when the corresponding instrument slot is triggered.



Below the display you'll find 32 wave slots that represent the 32 harmonic envelopes. When playing a sound, the each used wave slot shows an activity. Click on the desired slot to select it and edit the draw points for the corresponding harmonic envelope as desired.



- **SEGMENTS:** Here you can change the number of used samples for a segment. Normally, a segment consist of 128 samples. The minimum setting is 1 sample, the maximum setting is 7999 samples. Click on the **NORMALIZED** button to raise the level of the segments automatically.
- **WAVETABLE VOICE:** Here you can select the waveform that is used for the harmonic representation of the wavetable. You can choose between different harmonic waves as sine, saw or square and more complex wavetables as Metalizer or Ultrasaw.



- **WAVE ENVELOPE:** For quicker editing you can copy and paste wave slots. Click on the **COPY** button to copy the actual selected wave slot into the clipboard. Select the desired wave slot and click on the **PASTE** button to paste the clipboard into this wave slot. Click on the **RESET** button to reset the selected wave slot to its default settings. Click on the **RESET ALL** button to clear all 32 harmonics. A confirmation window appears where an additional confirmation is necessary.

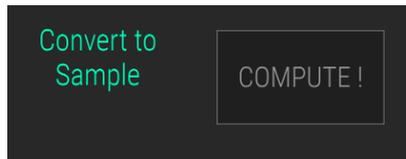


Convert to Sample

An additive sound or wavetable can be also converted back to a sample waveform. Just click on the **COMPUTE** button to perform the conversion. This will switch back to Sample mode automatically, where the sample waveform is shown progressively.

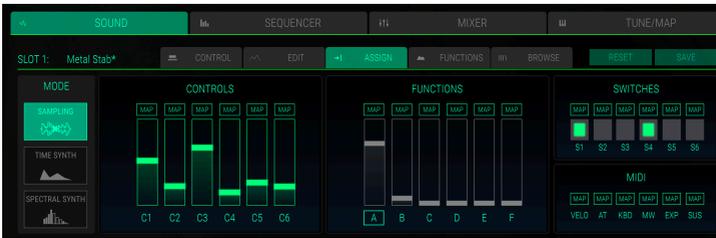


! Keep in mind that converting a sample into harmonics and back into a sample won't sound the same.



5.4. Assign Tab

Click on the **ASSIGN** tab to open the Assign page.



The assign controls

Here you can make assignments and settings for the macro controls on the basic user interface. Keep in mind that these settings are valid for all instrument slots. The CONTROLS (C1 to C6) and SWITCHES (S1 to S6) sections regard to the controls left besides the virtual keyboard while the FUNCTIONS (A to F) section applies to the macro control unit above the virtual keyboard. The MIDI section allows you to assign parameters to MIDI controls as velocity, aftertouch and mod wheel. Moving any slider or clicking on a switch also affects the settings of the sliders/switches on the basic user interface. The Function settings can be combined with the modulation sources in the FUNCTIONS sub page. Read more about this in the chapter [The Functions Tab \[p.39\]](#).

The basic concept of assigning parameters to a corresponding fader or switch is to click on the **MAP** button, set up the desired modulation offset for a parameter, and confirm the procedure by clicking on the **MAP** button again. By moving the mouse pointer over the **MAP** buttons, existing assignments will be displayed within the parameter sections and the corresponding parameter name will lit in orange.

When a switch is controlled by a modulation source, it can't be modulated by something else, nor you can change its value directly on the switch. In this case, the corresponding switch is greyed out.

 While mapping a parameter, SHIFT + clicking and moving a parameter changes its regular value. This allows you to make parameter and offset editing at the same time.



For example, if you want to assign the Sample Start to Control slider C2. Please proceed as follows:

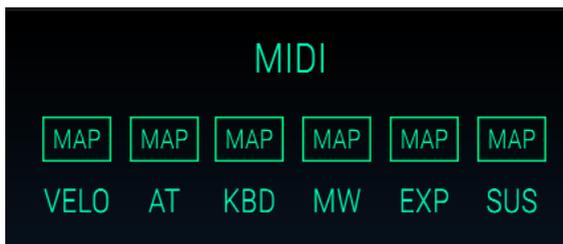
- Click on the **MAP** button of slider C2 to enter the assignment mode. It will be lit orange.
- Select the instrument slot where you'd like to set up the assignment.
- Click on the **SMPL START** parameter and move it to the desired offset amount, e.g. 50%. The amount and the corresponding parameter name will be shown in orange.
- If you want to edit the regular parameter value, hold SHIFT and move it to the desired value.
- Click on the **MAP** button again to deselect the assignment mode.
- Move slider C2 to check the result.



When a fader has a control / function assigned to it, the "final" value of the parameter is shown with a small vertical line. The slider retains its "static" value, the vertical line is the sum of that static value and the modulations applied to it.

MIDI

The MIDI mappings let you set up MIDI controls for changing sound parameters. The mapping process is the same as for the Controls and Functions. In the case of switches which only have two positions (on or off), those would normally be assigned to buttons on your controller. But it is possible to toggle those with a fader or other control if you like.



The following MIDI controllers are available:

- **VELO** (Velocity): Controls a parameter offset with the keyboard velocity.
- **AT** (Aftertouch): Controls a parameter offset with the keyboard pressure, known as aftertouch. This will only work if your MIDI keyboard supports channel aftertouch. Polyphonic aftertouch is not supported.
- **KBD** (Keyboard): Controls a parameter offset with the keyboard tracking. Based on the played note number, a modulation signal is generated.
- **MW** (Modulation Wheel): Controls a parameter offset with modulation wheel of your master keyboard.
- **EXP** (Expression): Controls a parameter offset with the MIDI Controller #11 which normally controls expression.
- **SUS** (Sustain): Controls a parameter offset with a sustain pedal. Keep in mind that a sustain pedal is a switch that doesn't create continuous control values.

5.5. Functions Tab

Here you can set up six independent modulation functions to control different destinations on the Control page. Each function can be freely drawn within the graphic editor and synchronized to musical values. This lets you create envelope-shaped modulations as well as LFO-like waveforms. Functions are available separately for each instrument slot.



The Functions page

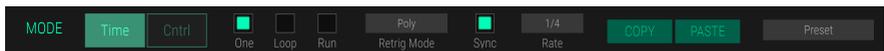
Click on the **FUNCTIONS** tab to open the Functions page. Make sure to select the desired instrument slot before editing the corresponding function.

The main concept of the Functions is to control a modulation destination, which has been assigned on the **Assign** page. Read more how to assign modulation destinations in the chapter [The Assign Tab \[p.37\]](#).

On the left side of the graphic editor, the letter buttons A to F let you select the corresponding Function A to F.

The main controls for the functions are located at the top of the graphic editor. Functions can be either used in **Time** mode or in **Control (Cntrl)** mode.

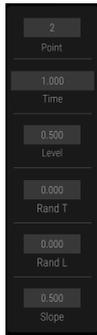
In **Time** mode, Functions A to F automatically have influence on the Function controls. If there is no Function curve set up, the corresponding Function modulation will not work.



Within the graphic editor you can draw curves with up to 16 freely-defined break points. The default curve is an even line with a start and end point.

- To add more break points, just click on the desired location within the editor.
- To remove a break point just right-click on the desired break point.
- Click and move a break point to the desired location.
- Click on the double arrow symbol in the line between two break points and move it up or down to change the line from linear to exponential/logarithmic slope and vice versa. An arrow symbol is automatically available when adding a new break point.

You can also edit all break points by using the parameter column next to the graphic editor. Click on the desired parameter and move the mouse up or down to change parameter values.



The following parameters are available:

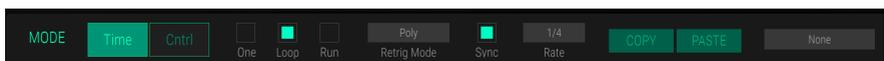
- **Point:** Selects the corresponding break point for further editing.
- **Time:** Changes the horizontal position of the selected break point.
- **Level:** Changes the vertical position of the selected break point.
- **Rand T** (Random Time): Creates a random time after the selected break point until the next break point is reached. The higher that value, the more random the result.
- **Rand L** (Random Level): Creates a random level after the selected break point until the next break point is reached. The higher that value, the more random the result.
- **Slope:** Changes the slope after the selected break point from a linear to an exponential/logarithmic curve.

To understand how the Functions work, we recommend that you set up a basic filter modulation on the Assign page:

- Click on **ASSIGN** to open the Assign page.
- Select the instrument slot where you'd like to set up the assignment.
- Click on the **FILTER** parameter in the **TUNE/FILTER** section and move it to the rightmost setting. Now, the filter should be open and your sound is played with full harmonic content.
- Click on the **MAP** button of Functions slider A to enter the assignment mode. It lits orange.
- Click on the **FILTER** parameter in the **TUNE/FILTER** section and move it to the desired offset amount, e.g. -80%. The amount and the parameter name will be lit orange.
- Click on the **MAP** button again to deselect the assignment mode.
- Now the filter slider is connected to Functions slider A which is influenced by Function A on the FUNCTIONS page.

The Function controls in Time mode

Click on the **Time** button to select the Time mode.



Here you can set up time-based curves that have influence on the amounts of defined modulations. The following parameters are available:

- **One:** If activated the modulation curve is driven through from start to end after a note is triggered. This creates envelope-like effects.
- **Loop:** If activated, the modulation curve is driven through in a cycle and is retriggered every time a new note is played. This creates LFO-like effects.
- **Run:** If activated, the Function is looped freely. It follows the song position pointer.
- **Retrigger Mode:** If *Mono* is selected the Function is played monophonically, which means that all played notes use the same single Function. If *Poly* is selected, every played note uses its own Function curve that starts from the beginning of a new note.
- **Sync:** Synchronizes the rate of the modulation drive-through to the tempo of the host application. If activated, the graphic editor displays a musical grid.
- **Rate:** Determines the speed at which a function curve is driven through. (from 0.1 to 20 Hz). When **Sync** is activated you can set musical values, e.g. 1/4 or 3/8.
- **COPY/PASTE:** Click on the **COPY** button to copy the parameter settings of the currently selected break point into the clipboard. Select a desired break point and click the **PASTE** button to insert the copied parameter.
- **Function Presets:** Here you can save and load presets. Click on the button to open a pop-up menu where you can load stored functions and save the current function.

The Function controls in Control mode

Click on the **Cntrl** button to select the Control mode. In this mode the function will transform a source control directly, which is defined in the Control Source pop-down menu.

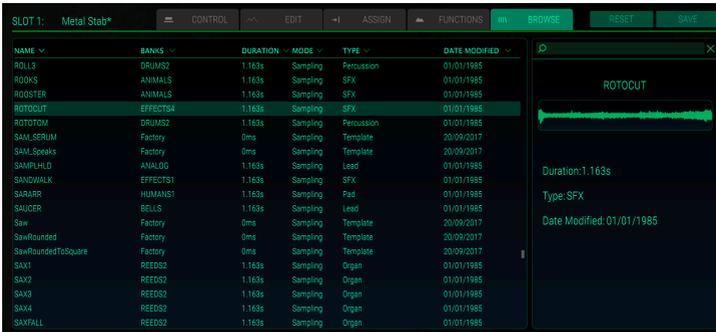


The following parameters are available:

- **Control Source** (CntrlSrc) pop-down menu: Here you can select the desired modulation source. You can select one of the six Controls or switches as well as one of the four MIDI sources.
- **COPY/PASTE:** Click on the **COPY** button to copy the parameter settings of the currently selected break point into the clipboard. Select a desired break point and click the **PASTE** button to insert the copied parameter.
- **Function Presets:** Here you can save and load presets. Click on the button to open a pop-up menu where you can load stored functions and save the current function.

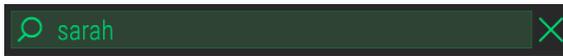
5.6. Browse Tab

Click on the **BROWSE** tab to open the Browser page. Here you can easily search and load sound presets and samples directly into a selected instrument slot. Also all Time synth and spectral synth presets are available.

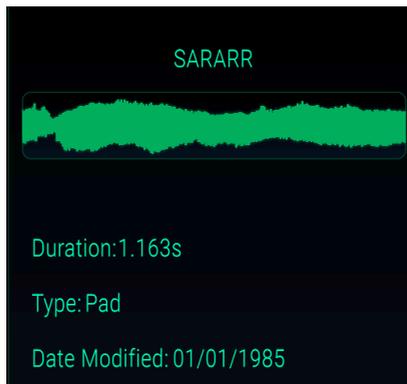


The Browser page in Sound mode

The left area of the Browser page shows a list of the available samples/sounds that come with your CMI V in alphabetical order. You can either use the scroll bar or your mouse wheel to move the list up and down. The list gives you a basic overview of the sample names, the corresponding bank, the size in (milli)seconds, the mode, type and modification date. Click on the column header to sort the sample list. You can also use the search field in the right section to easily search for a sample by name or letters. Click on the X to reset the search field.



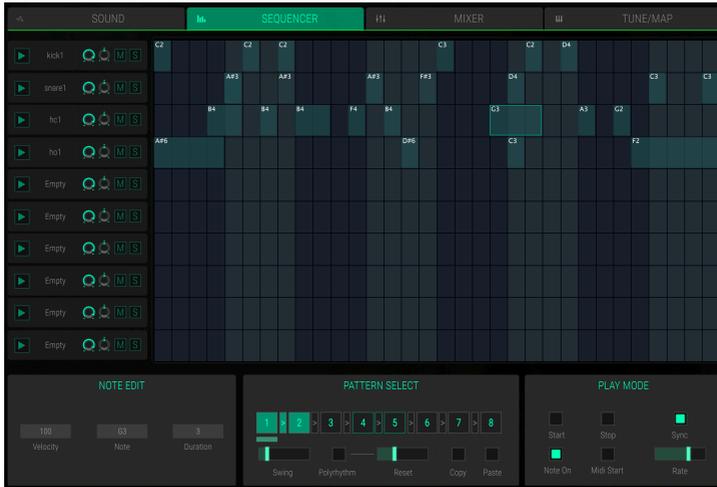
Click on the desired sample in the browser list to start the automatic playback. A preview will load the entire instrument including effects, the synthesis mode if it's being used instead of sample mode and functions. Also, the basic information is displayed in the right window section (sample name, waveform, duration, type and modification date). Double-click a sample to load it into the selected instrument slot. Make sure to select the desired slot before loading a sample. You can also drag & drop a sample directly onto a desired slot.



6. THE SEQUENCER PAGE

One of the main features of the original Fairlight CMI IIX was the so-called Page R which included a multi-track sequencer. Of course, we re-created this simple but effective sequencer within CMI V.

Don't expect a high-end up-to-date sequencer such as Pro Tools, Logic or Cubase. But sometimes the limitation is the secret for brilliant musical phrases. So let's see how the old-fashioned mother of all sequencers is working!



The Sequencer page

Click on the **SEQUENCER** tab in the upper toolbar of the Screen panel to enter the Sequencer page.

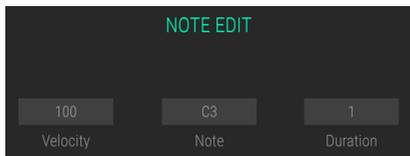
On the left section of this page you'll find all 10 instrument slots. The **Trigger**, **Volume**, **Panning**, **Mute** and **Solo** controls are the same as in the slots themselves. For more information read the [corresponding chapter \[p.23\]](#).

On the right section you will find a grid where you can create steps for each of the instrument slots. Up to 32 steps are available. This is called a *Pattern*. Up to 8 patterns can be combined for playback.

How to create and edit steps

- Click on the desired grid position to create a step. This step will trigger the note C3 with the length 1/4 and velocity of 100 in the corresponding instrument slot.
- A right-click on an existing step will delete it.
- Click on a step and move it within the grid to change its position. Overlapped notes will be deleted until the currently held note is released over another note.
- Click on a step and move it while holding the ALT key copies this step.
- Click on the top position of a step and move the mouse up or down to change the note pitch. The current note number will be displayed within the step. In the **NOTE EDIT** section you can also see your result.
- Click on the top position of a step while holding the SHIFT key and move the mouse up or down to change the velocity. In the **NOTE EDIT** section you can see your result.
- Click on the right or left position of a step and move the mouse right or left to lengthen or shorten a step. Keep in mind that the minimum duration is one step length.
- To change the velocity of a step to a specific value, click on it and edit the **Velocity** parameter in the **NOTE EDIT** section.
- Click on one of the desired **Pattern** buttons in the **PATTERN SELECT** section to select the corresponding pattern.

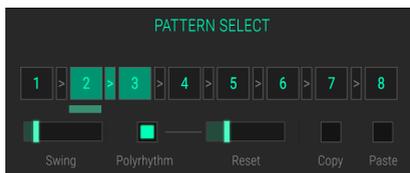
NOTE EDIT



- **Velocity:** Click on the value field and move the mouse up or down to change the velocity of the selected step.
- **Note:** Click on the value field and move the mouse up or down to change the note pitch of the selected step.
- **Duration:** Click on the value field and move the mouse up or down to change the duration of the selected step. Overlapped notes after the actual step will not be deleted.

PATTERN SELECT

Here you can select the patterns and make individual settings for them. You can also combine patterns for a desired playback order.

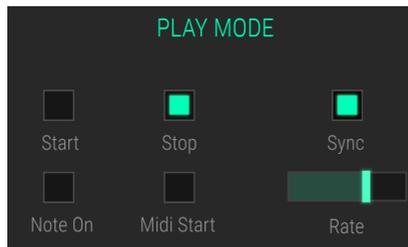


To select a pattern, click on the corresponding number button. Set up **Swing**, **Polyrhythm** and **Reset** individually. If only one pattern is selected, this pattern will be played in a cycle.

- **Pattern Chain:** You can chain patterns for playback. Click on the arrow between two patterns to chain them. For example, if you want to play back pattern 3, 4 and 5, click on the arrows between patterns 3 and 4 and patterns 4 and 5. A green bar under the pattern shows the pattern that is being played. You can deselect a pattern chain by clicking on the corresponding arrow again.
- **Swing:** Each pattern can have an independent swing amount. The slider controls the strength of swing or shuffle on 16th-offbeat steps. For a normal pattern, a middle setting of the slider results in a straight beat with all 16th-offbeat steps exactly in the middle between the adjacent 8th. Higher settings of Swing cause the offbeat steps to be played later. The highest setting effectively moves the 16th-offbeat steps to a dotted 16th.
- **Polyrhythm:** For each pattern, you can set an own length. Click on **Polyrhythm** to activate the Polyrhythm mode. Use the **Reset** slider to define the number of played steps. This works also if patterns are in chain mode.
- **Reset** slider: Here you can define the number of played steps when **Polyrhythm** is activated. The **Reset** setting has no function if **Polyrhythm** is inactive.
- **Copy and Paste:** Select a desired pattern with steps and click on the **Copy** button to copy it into the clipboard. Now select a destination pattern and click on the **Paste** button to paste the copied pattern.

PLAY MODE

Here you can control basic sequencer functions such as transport and speed.



- **Start:** Click on the Start button to start sequencer playback. A thin red line shows the current play position.
- **Stop:** Click on the Stop button to end playback.
- **Note On:** Click on the Note On button. After that, any incoming MIDI note starts the playback of the sequencer.
- **Midi Start:** Click on the Midi Start button. An incoming MIDI Start message starts the playback of the sequencer.
- **Sync:** Activates the synchronisation to the host application.
- **Rate** slider: Controls the speed of the sequencer. If **Sync** is activated, the basic tempo is set from the host application.

7. THE MIXER PAGE

The Mixer page allows you to adjust the volume and panning for each of the 10 instrument slots. You can also add an effect for each of the slots. A master channel is also available.

Click on the **MIXER** tab in the upper toolbar to enter the Mixer page.



The Mixer page

Each **SLOT** channel features the same basic controls:

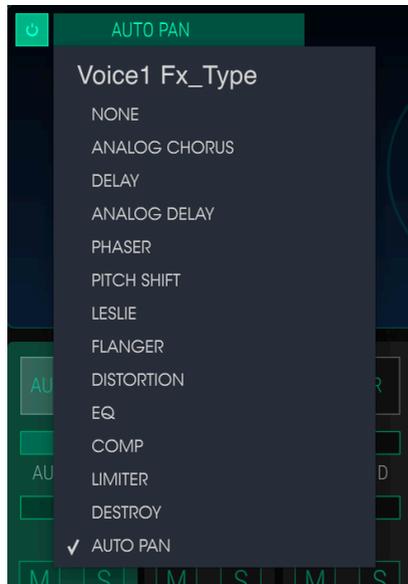
- **Slot Selection:** Click on the desired slot channel to select it. This selection is also performed on the Sound page for the corresponding slot.
- **Trigger (Play symbol) button:** Click on this button to trigger the corresponding slot. The loaded sample is played until you click on the button again. Use this function to check a channel signal or when no MIDI input device is available.
- **Volume fader:** Click on the fader and move it to up or down to change the volume of the corresponding channel. Next to the volume fader is a level meter that shows the current sound level of the corresponding slot channel.
- **Mute (M) button:** Click on this button to mute the currently selected channel.
- **Solo (S) button:** Click on this button to solo the corresponding channel. This mutes all other channels. You can set more than one channel into Solo mode.
- **PAN (Panning) slider:** Click on the slider and move it to the right or left to change the panning of the corresponding slot.
- **AUX SEND slider:** Click on the slider and move it to the right to send a part of the channel signal into the AUX bus. This lets you create a send effect routing.
- **Effect Name field:** Each channel features an insert effect slot. This field shows the current used effect type. If no effect is used, the field displays *NONE*. For more information on available effects and edit parameter please read the [next section \[p.47\]](#).

The **AUX RETURN** channel is an additional audio bus which can be used to create a send effect routing. You can use the **AUX SEND** slider to send a certain part of an audio signal from every track channel into the Aux Return bus. Here you can set up a desired effect. The Aux Return bus doesn't offer all of the same effects as the single channels, but a Reverb effect is available.

The **MASTER** channel features two effect slots. Click on the desired effect field to select the corresponding effect for editing. The effects and their parameters are the same as for the slot channel effects. Keep in mind that the master effects will influence all slot channels and also the AUX RETURN. Please read the next section for more information about the available effects.

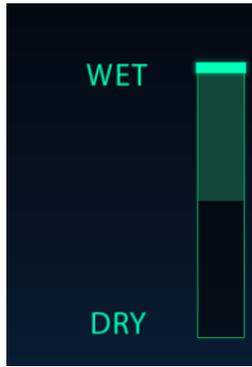
7.1. The Effects in detail

Here you find an explanation of all effects that are available for the SLOT channels, the MASTER channel and also the AUX RETURN channel. To select an effect, click on the pop-down menu and choose the desired effect type. Each effect has a number of dials specific to that effect.



To enable or disable an effect, toggle the on/off button to the right of the effect name. This is sometimes referred to as a "bypass" switch. Audio will still pass through the disabled effect to the next effect or the mix output, but the effect itself will not affect the audio signal.

Each effect features a **WET/DRY** slider which controls the percentage of the original signal that passes through to the output, if an effect is active. If set to *DRY*, only the dry signal is sent to the output so that no effect can be heard. Higher values will increase the effect signal. At maximum setting of *WET*, the pure effect signal will be heard.



! Remember, when you change a control on an effect the numerical value for the parameter is displayed in the lower toolbar at the bottom of the screen.

7.1.1. Analog Chorus

A Chorus effect is similar to a flanger in that it splits the signal, delays one side, varies the delay time gradually, and mixes a number of copies back together. The difference is that the length of the delay time is longer than that of a flanger, which results in a more subtle but still very interesting effect. A chorus module recreates the sound of multiple takes of an instrument being combined in a mix.

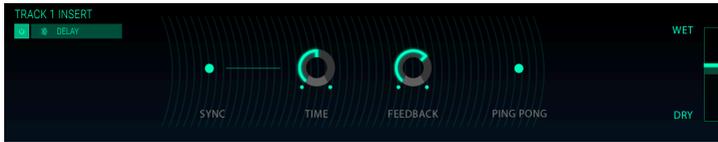
The speed of the effect is set by the Chorus Rate dial, while its depth and width are controlled by the Amount and Delay dials, respectively. The resulting “frequency blur” is different for the left and right halves of the signal, which allows us to derive a stereo signal from a mono signal. The difference between the two halves then can be set with the Stereo width, with the speed of the left-right rotation under the control of the Stereo rate dial. The Wet/Dry control sets the ratio between the input signal and the treated signal, while the Type switch selects between three different chorus models: simple, medium, and complex.



- **Chorus Type 1, 2, 3:** Three chorus types can be selected with either 2, 4 or 6 independent delay lines, where half of them are routed to the left input and output and the other to the right input and output.
- **Stereo Width:** Controls the width of the stereo effect.
- **LFO Rate:** Adjusts the LFO speed of the Chorus effect.
- **LFO Amount:** Sets the modulation depth of the Chorus effect.
- **LFO Delay:** Sets the amount of delay applied to the input signal.

7.1.2. Delay

A delay can increase the spaciousness of a sound without making the sound “swim” the way some reverbs do. It can also be used as a rhythmic counterpoint to accentuate a groove. This digital delay repeats the input signal and creates an “echo”, giving it more space and depth. The Time knob offers a range of settings from 9 milliseconds to 1 full second.



- **Sync:** Locks the delay to the current tempo of the DAW.
- **Time:** Turning the dial clockwise increases the delay time; turning in the opposite direction shortens it.
- **Feedback:** Adjusts the Feedback amount. Larger values cause the delay to be heard longer.
- **Ping Pong:** Hard-pans the effected signals so they “bounce” from left to right.

7.1.3. Analog Delay

This analog delay reproduces the sound of the old solid state units and is LFO-controlled.



- **Delay Time:** Sets the time distance between original and delayed signal.
- **Feedback Tone:** Increases or decreases the high frequency content in the feedback.
- **Feedback Amount:** Sets the amount of feedback. When fully clockwise the feedback will take a long time to die out.
- **LFO Depth:** Will cause a slight pitch variation.
- **LFO Rate:** Sets the speed of the pitch variation.

7.1.4. Phaser

Phase shifting is a sweeping effect that was first popularized in the 1960s. It adds motion and a swirling character to the sound. It works by splitting the incoming signal, changing the phase of one side, and recombining it with the unaffected signal. This creates a notch-comb filter which can be swept through the frequency spectrum, causing the signature “whooshing” sound of the phase shifter. The sweep is caused when the phase of the affected half is modulated by an oscillator, with the frequency determined by the Rate control. The Depth knob sets the amplitude for the action of the filtering, while Feedback amplifies certain harmonics.

This particular phaser is a two-stage phaser. The two stages can operate independently or in sync with each other. What makes this phaser somewhat unusual is that the delay time can also be varied with noise. The following parameters are available independently for both Stage 1 and Stage 2.



- **Rate:** Sets the speed of the phaser.
- **Depth:** Sets the depth of the phaser activity.

Stages 1 and 2 share these parameters:

- **Sync:** Locks both stages to the current tempo of the DAW and/or the rate of the delay.
- **Feedback:** Controls the amount of phaser resonance.
- **Dual Mode:** *Single* means Stage 1 is on the left side and Stage 2 is on the right. With *Dual* both stages process both sides; the Phaser output is mono.

7.1.5. Pitch Shift

This effect can be used to take the pitch of the incoming audio signal up or down.



- **Delay:** Determines the latency between the original and the detuned signal. The higher the latency, the more chorus-like the effect result.
- **Level:** Sets the volume level of the input signal.
- **Detune:** Detunes the original signal.

7.1.6. Leslie

This modulation effect simulates the classic effect of a rotating speaker as invented by Donald Leslie in 1940. A rotary speaker cabinet features speakers rotating at variable speeds to produce a swirling chorus effect, commonly used with organ sounds.



- **Speed Selector:** Sets the speed of the Leslie effect in three steps (Stop/Slow/Fast)
- **Rate:** Sets the fine control adjustment for rotor speed.
- **High Width:** Sets the modulation amount of stereo panning for the high rotor.
- **High Shape:** Controls the variable high rotor amplitude modulation.
- **High Depth:** Adjusts the high rotor frequency modulation (Doppler effect).
- **Low Width:** Adjusts the depth of the low rotor panning modulation.
- **Low Shape:** Sets the low rotor amplitude modulation amount.
- **Output Gain:** Sets the overall effect level.

7.1.7. Flanger

A flanging effect is created by combining two identical signals, delaying one of the signals by a small amount, and then modulating the delay time. The recombined output produces a sound that sweeps up through the harmonics of the original signal and back down. This produces a swept “comb filter” effect.

Flanging can create both subtle and extreme effects, depending on the Rate and Depth of the modulation. With higher Depth settings you will begin to hear changes to the pitch of the sound. This is how the circuits in an analog flanger work, and we have taken care to recreate these conditions.



- **Delay Time:** Sets the delay time, which changes the harmonic content.
- **Depth:** Sets the modulation depth. This is set to “max out” at less than 100% to limit runaway feedback.
- **Rate:** Sets the modulation rate for the delay time.
- **Feedback:** Adds positive or negative feedback for a harsher or “ringing” sound. Double-click this control or set it to the 12:00 position for zero feedback.

7.1.8. Distortion

Will add gain to a signal causing it to clip and distort. It introduces new harmonics that add a harsh edge to sounds.



The controls are:

- **Drive:** Sets the overdrive amount.
- **Tone:** Increases the high frequency of the sound, adding a harsher edge.
- **Output:** Sets the general level of the overdrive. Allows you to compensate for increased amplitude caused by the drive.

7.1.9. EQ (Equalizer, not available for AUX RETURN)

An equalizer selectively amplifies or attenuates frequencies in the frequency spectrum. This equalizer contains five bands with the following parameters.



Lo Band

- **Lo Freq:** Selects the cutoff frequency (from 20 to 300 Hz) from which the signal is attenuated/boosted by the **Lo Gain** amount.
- **Lo Gain:** Decreases or increases the gain of the low frequency band.

Mid Bands P1, P2 and P3:

- **Gain:** Decreases or increases the gain of the corresponding frequencies.
- **Freq:** Sets the frequency in Hz (Hertz) at which the tones will be affected. Frequency ranges from 250 to 5000 Hz.
- **Width:** Sets the width of the mid frequency band.

Hi Band

- **Hi Freq:** Selects the cutoff frequency (from 1 kHz to 20 kHz) from which the signal is attenuated/boosted by the **Hi Gain** amount.
- **Hi Gain:** Decreases or increases the gain of the high frequency band.

7.1.10. Comp (Compressor, not available for AUX RETURN)

A compressor is generally used to help maintain a consistent level of sound, though there are many other ways to use one. You could think of it as a very fast manual control that turns down the volume when it becomes too loud and raises it when too soft.

If, for example, you are using effects in a chain, it can keep the attack transients of a sound from overloading the input of the next effect. It can also help a sound which would normally decay quickly not to fade away as quickly. Drums are often compressed to add "punch". Compression is also routinely added to radio and television audio levels to keep them within a certain volume range. The Attack and Release control the response time of Compressor by defining how quickly the compressor reacts to input-level changes. Longer attack times could allow fast peaks to slip through.



- **Input:** Adds gain to the signal before the start of the compression process.
- **Threshold:** Sets the level where the compression will kick in.
- **Ratio:** The compressor ratio determines the amount of compression that will be applied once the threshold is reached. For example, if the ratio is set to 2:1, signals exceeding the threshold by 2 db will be allowed to increase by only 1 dB. An 8 dB increase will be reduced to a 4 dB increase, and so on.
- **Attack:** Adjusts the speed with which the compression will kick in once the threshold is reached.
- **Release:** Sets the release curve of the compressor.
- **Make Up:** Controls the final output level of the compressor.

7.1.11. Limiter (not available for AUX RETURN)

A limiter is designed to ensure that the output level never exceeds a set output level, to avoid clipping.



- **Gain:** Adds or reduces signal gain before the start of the limitation process.
- **Release:** Sets the amount of time it takes for the gain to return.
- **Knee:** If set to 0, signals above the threshold are limited instantly according to the set level. Higher settings produce a less drastic result.
- **Level:** Controls the final output level of the limiter.

7.1.12. Destroy (not available for AUX RETURN)

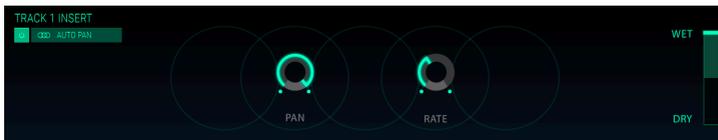
The Destroy effect will literally take your sound apart. By reducing the number of bits used to express the sound, details will gradually disappear. To explore the sound alterations of this effect start by setting the tone, bit reduction and resample dial to maximum. Then gradually turn the dial counter-clockwise. This will reduce the bitrate, making the sound more and more indistinct. Combined with the resample option, you can deconstruct/destroy the source sound even further.



- **Clipping:** Sets the level where clipping will occur. Clipping is a process where the peaks in a signal are cut off. The waves are mutilated, which causes a very distinct kind of distortion.
- **Harm Dist:** Alters the harmonic content of an input signal by distorting the harmonic balance of the overtones contained in the signal.
- **Bit Red:** Reduces the resolution; i.e., the number of bits used to render the input signal.
- **Resamp:** Resamples the already bit-reduced signal. At lower settings this will destroy the coherence of the input signal.
- **Tone:** Decreases the high frequency content in the signal.
- **Gain:** Allows you to compensate for the loss or gain in amplitude caused by the resample and bit-crushing operations.

7.1.13. Auto Pan (not available for AUX RETURN)

This effect modulates the left/right stereo position of the audio signal.



- **Pan:** Sets the basic panning of the audio signal.
- **Rate:** Sets speed of the panning effect.

7.1.14. Reverb (only available for AUX RETURN)

Reverb units create a large number of echoes that gradually fade or "decay". Almost every space has a reverb characteristic determined by the prevalent materials in that space: Are there many objects? Do they absorb sound? Are the walls parallel? Any curtains? How big is the room and how high the ceiling? The sum of all these factors creates the characteristic of the reverb.



- **Pre-Delay:** Controls the onset of the initial burst of reverb by delaying it for up to 500 milliseconds. When the pre-delay phase ends the actual reverb starts.
- **Room Size:** The room size of a reverb makes it possible for us to determine the size of the space we're in. A church or a big cave will have a much longer decay time than a small room. The Room Size time sets the length of time the reverb takes to fade out.
- **Width:** Adjusts the output of the reverb signal between mono and stereo. At a setting of 0.00%, the output of the reverb is mono, at 100% it is stereo.
- **Tone:** In a room full of carpets, furry animals and cozy furniture the high frequencies will quickly disappear; they're absorbed by the materials and will never reach the ear. In a new, undecorated apartment the sounds will bounce off the walls without anything to dampen them: the high frequencies will survive longer, making sounds harsher. If your tracks sound too harsh you can make them warmer by increasing the high frequency damping.
- **Tame:** Click on the this button to influence the behaviour of the Tone parameter.
- **Gain:** Determines the input level for the source sound.

8. THE TUNE/MAP PAGE

On this page, you can set up the tuning and keyboard mapping for each of the 10 instrument slots.

Click on the **TUNE/MAP** tab in the upper toolbar to enter the Tune/Map page.



The Tune/Map page

You can either edit the 10 slots directly within the graphic keyboard display or select the corresponding slot and make the edits in the **SLOT MAP** section.

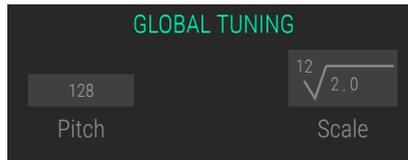
On the left section of this page you'll find all 10 instrument slots. Click on a slot to select it. The **Trigger**, **Volume**, **Panning**, **Mute** and **Solo** controls are the same as in the slots themselves. For more information read the [corresponding chapter \[p.23\]](#). On the right section you will find a keyboard range and Root key (green dot). Each slot can be limited to a desired key range. You can set the range by dragging the keyboard range control at its ends. When you click on it, the current value will be displayed beside the mouse pointer and also in the miniature keyboard below the right section. To change the Root key, click and drag the green dot to the desired key position. Both the current keyboard range and Root key for the selected slot will be also shown in the **SLOT MAP** section. Click in the center of a keyboard range and move your mouse to the right or to the left to move the complete map. Click on a desired note of the miniature keyboard. This will trigger all slots that are mapped to this note.



GLOBAL TUNING

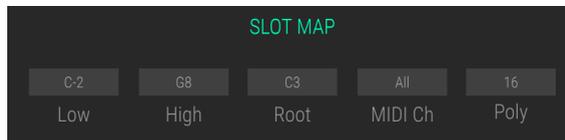
Here you can make settings regarding the overall tuning.

- **Pitch:** Sets the overall tuning adjustment within the range of one semitone. The default value is 128 and will produce A = 440 Hz. 0 is one semitone below, 255 is one semitone above. Use **Pitch** to adapt the CMI V tuning to other instruments.
- **Scale and Root:** Sets the pitch increment (the change in pitch between the keys). The default setting is the twelfth root of 2, which means a standard tempered scale by specifying that 12 keys change the pitch by factor of 2 (1 octave). For example, to specify a 1/4 tone scale, set **Root** to 24 and **Scale** to 2, i.e, 24 keys generates 1 octave.



SLOT MAP

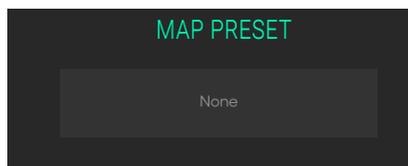
When a slot is selected, all settings will be shown in the SLOT MAP section. You can make independent settings for every instrument slot.



- **Low:** Click on the note display and move your mouse up and down to set the low end key for the keyboard range.
- **High:** Click on the note display and move your mouse up and down to set the high end key for the keyboard range.
- **Root:** Some sample files might have a so-called Root key that defines the pitch at which the original sample was recorded. Here you can change this Root key by clicking on the note display and moving the mouse up or down.
- **MIDI Ch:** Normally all slots play simultaneously when MIDI notes are triggering them (*All*). Here you can select one of the 16 MIDI channels from 1 to 16 for each slot. For example, you can use MIDI channels 1 to 10 to trigger the slots independently, or you can set up layered sounds that use 3 slots for MIDI channel 1 and 4 slots for MIDI channel 2.
- **POLY** pop-up menu: Selects various polyphonic and monophonic voices of the selected slot. Up to 32 voices can be played on each slot. You can also set an instrument slot to *Mono*, which means it plays only single monophonic notes.

MAP PRESET pop-down menu

Here you can load and save any settings you have made for keyboard ranges. Click on the **MAP PRESET** button to open a pop-down menu. Here you can save and name your keyboard range set. You will also find a list with all saved keyboard ranges. Select the desired range preset. By clicking the X to the right of the name you can delete presets from the list.



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