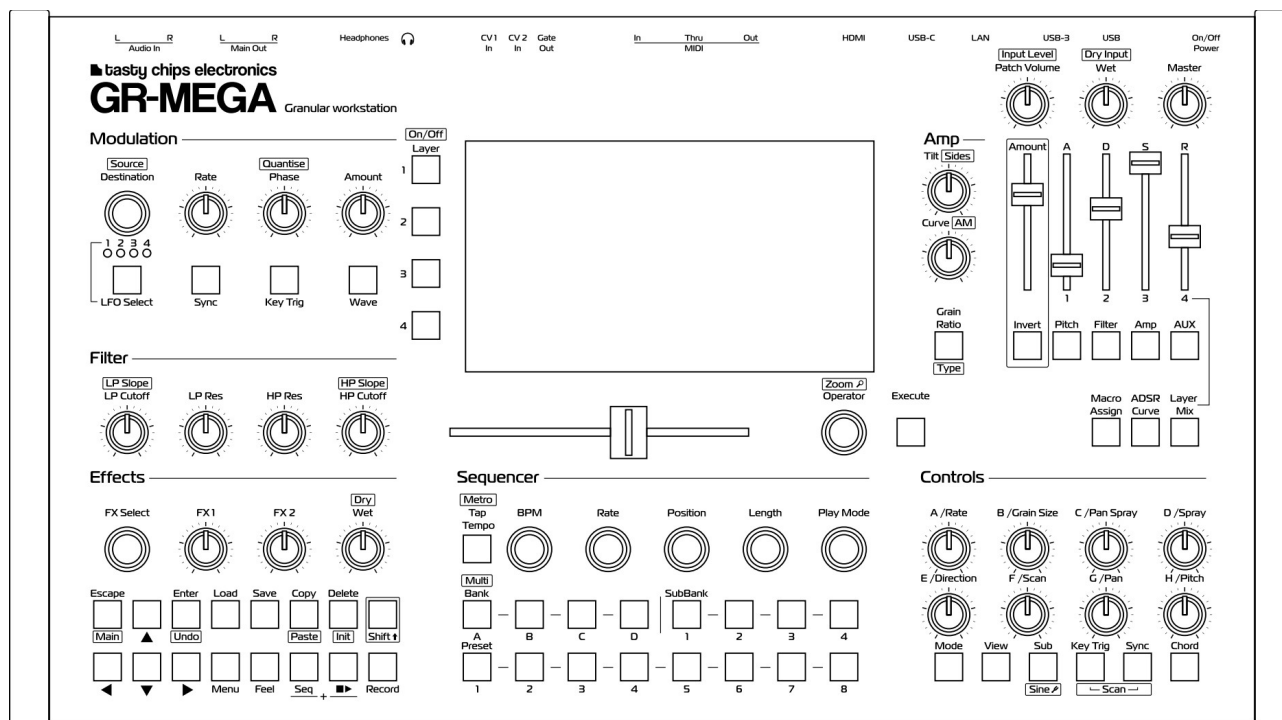


tasty chips electronics

GR-MEGA



User Manual

This manual is written by
Pieter van der Meer

Illustrations & formatting
Luc Derks

2024-2026

Table of Contents

Document version naming.....	6	“LFO” (modulation) sidebar.....	33
Document version.....	6	Sound Engines.....	35
Applicable firmware versions.....	6	Sound Engine Controls.....	35
Contents of the box.....	7	Granular Sound Engine.....	37
Important safety and maintenance instructions.....	7	Rate.....	37
Power supply and power lead.....	8	Grain Size.....	37
Power supply.....	8	Rate, size, and density.....	38
Factory furnished AC lead.....	8	Grain Ratio.....	38
Power specification.....	8	Spray.....	40
Reading this manual.....	9	Pan Spray.....	40
Warranty.....	10	Panning.....	40
GR-Mega Quickstart.....	11	Scan.....	41
Global Overview.....	12	Direction.....	41
Front Panel.....	12	Granular Slice Sound Engine.....	42
Display.....	13	Slices.....	42
Position slider and Operation encoder....	13	Setting slices (Operation menu).....	43
Menu, navigation, editing & disk access.....	15	Add slices.....	43
Presets & banks.....	16	Auto slice.....	44
Sound engine controls (ABC knobs).....	17	Auto slice sensitivity.....	44
Amp section.....	18	Delete slices.....	44
Filter controls.....	20	Drag slices.....	45
Modulation section.....	21	Sampler Sound Engine.....	46
Sequencer section.....	22	Tape Sound Engine.....	47
Macros.....	23	Tape slew.....	47
Back Panel.....	25	Chord mode (in Tape Mode).....	47
CV & Gate.....	25	Spectral Sound Engine.....	48
Audio Outputs (L/R).....	25	Rate knob (A) – amplitude threshold.....	48
Headphone connection.....	25	Size knob (B) – FFT size.....	48
Audio IN (L/R).....	26	Pan spray knob (C) – Phase smear /	
MIDI.....	26	Reducer.....	48
USB-A.....	26	Pan spray (D) – Amp smear.....	48
USB C.....	27	Direction knob (E) – Direction.....	48
HDMI.....	27	Scan knob (F) – Scan.....	49
LAN.....	28	Pan knob (G) – Pan.....	49
Power button & DC adapter.....	28	Pitch knob (H) - frequency shift.....	49
Powering up (models pre October 2025):	29	Chord mode (in Spectral mode).....	49
Shutting down.....	29	The menus.....	50
Powering up from stand-by.....	29	Patch menus.....	50
Powering up (models October 2025 and		Patch menu (General).....	51
newer):.....	30	Patch menu (Voicing).....	52
Shutting down.....	30	Patch menu (Grain).....	53
Powering up from stand-by.....	30	Patch menu (Scan / slice).....	56
GR- Mega signal path.....	31	Patch randomizer menu.....	58
The main screen.....	32	Presets menu.....	59
Waveform.....	32	Templates menu.....	60
OSD.....	32	MTPresets menu.....	61
Envelope.....	32	Project menu.....	62
Window.....	33	File manager.....	63

Features.....	64	Scan looping.....	98
Navigation.....	64	Scan mode (Patch Menu).....	99
Traversing folders.....	64	[One-shot].....	99
Up to parent folder.....	64	[Loop].....	99
Sound previews.....	65	[Bounce].....	100
New folder.....	65	Scan Looped Release.....	100
Rename.....	66	Sample editing.....	102
Copy.....	67	Sample Tuning.....	102
Eject drive [▲].....	67	Sample Normalize.....	103
Move.....	68	Sample Crop.....	103
Delete.....	68	Crop Zoomed.....	103
Sampling menu.....	69	Crop recorded.....	103
Audio source.....	69	Crop start-end.....	103
Destination.....	70	Soft cut.....	104
Channels.....	71	Saving & Loading.....	105
Input gain.....	71	Loading.....	105
Arm.....	71	Supported sample formats.....	106
Record start mode.....	71	Supported patch formats.....	106
Loop recording.....	71	Saving.....	107
Scrolling rec.....	71	Undo.....	108
Clocked record.....	72	GR-MEGA Data types.....	109
Sample size.....	72	Samples.....	109
Clocked.....	72	Template.....	109
Init mono.....	72	Patches.....	109
Init stereo.....	72	Multitimbral patch / stack.....	109
Step sequencer.....	73	Projects.....	110
Sequencer mod lanes.....	74	System settings.....	110
Parameter locks.....	74	Multisamples.....	110
Sequencer ties.....	75	File sharing.....	111
Modulation Matrix.....	76	Setup.....	111
Curve.....	77	Note.....	111
Mod sources.....	77	Important.....	112
Effects menu.....	79	Windows 11.....	112
Sends column.....	79	Polyphony.....	116
Selecting Effects.....	80	Forms of polyphony.....	116
Effect types.....	81	Voice timbre.....	116
FX 1 and 2 Assign.....	82	Note hold.....	116
Dry/Wet.....	82	Voice stealing.....	116
FX Parameters.....	82	Grain stealing.....	116
Large reverb.....	83	Audio, and avoiding drop-outs.....	117
Resonator.....	83	Master volume and patch volume.....	117
System menu.....	85	Grain window modification.....	117
Audio prefs.....	87	Temperature and the internal fan.....	118
System UI.....	88	Tutorials.....	119
MIDI menu.....	90	Initializing a patch.....	119
IO menu.....	92	From sample to patch.....	121
Recording samples.....	94	Samples from internal storage.....	121
Resampling.....	95	Samples from USB.....	122
Crop & Loop confinements.....	97	Modifying a patch.....	122
Start End (loop) flags.....	97	Incrementally updating your patch.....	122
Sample Loop Confinement.....	98	The GR-MEGA as a granular effect.....	123

Entering text with built-in buttons.....	126	Firmware dropbox.....	165
Button combinations.....	127	FAQ – Frequently Asked Questions.....	166
Special button combinations.....	133	Troubleshooting.....	170
Computer keyboard support.....	134	Firmware upgrades.....	170
MIDI Command Table.....	136	Crashes.....	170
Precision MIDI: “NRPN”.....	136	Slow USB drive or stick.....	170
Rate divisions.....	153	Factory reset.....	170
Mod sources.....	153	Allow Tasty Chips remote access to your	
Technical Support.....	158	GR-MEGA.....	171
GR-Mega Specifications.....	158	Credits for the GR-MEGA.....	172
List of tested (USB-)MIDI controllers and		Development.....	172
keyboards.....	160	Special thanks to.....	172
List of recommended accessories.....	161	Contact.....	173
Firmware Updates.....	162		

Document version naming

This document's version is written as:

v<major version>.<minor version>.<patch level>
v<number>.<number>.a-z

The major and minor versions follow the GR-1 firmware versions. The patch level is separate from the firmware version's patch level (a correction in the manual text vs a software fix in the firmware).

Major version updates involve a complete redesign of the user interface and possible feature additions. Minor version updates involve feature additions.

Firmware patch level updates [0,1,2,3,4,..] purely involve bug fixes.

Document patch level updates [a,b,c,d,e,...] involve additions to documentation: yet undocumented features, typos, and errata.

Document version

1.7.f

Applicable firmware versions

1.7.* (1.7.0; 1.7.1; 1.7.2; etc)

Contents of the box

Congratulations!

You are now the proud owner of the Tasty Chips Electronics GR-MEGA granular workstation.

The contents:

- The box with schematic drawing of the GR-1 on its top side.

NOTE: this box features a sticker with serial number GME-XXXX!

- External region-independent AC/DC power supply, boxed.

* Region specific AC cord.

- Quick start guide (single A4 sheet).

* USB stick.

- The GR-MEGA unit, with sticker GME-XXXX on the bottom plate.

The display has a protective sticker on it, which may be peeled off if you prefer.

Important safety and maintenance instructions

Important safety and maintenance instructions

Do not use an AC/DC adapter other than the one that comes with the GR-MEGA, or the ones explicitly recommended by Tasty Chips Electronics. Doing otherwise may damage your GR-MEGA!

Do not connect high voltage input/output connectors to the GR-MEGA.

Avoid this product from falling. Avoid spillage of fluids. Keep it dust free, and keep it out of damaging environments. Keep your GR-MEGA out of reach of children and pets.

Do not open this product. Please contact Tasty Chips Electronics when (part of) your GR-MEGA does not work (when it freezes or resets). Contact information can be found at the end of this manual.

Please treat your GR-MEGA well.

Power supply and power lead

Power supply

Brand: Mean Well

Model: GST40A12-P1J

Model: GSM60A12-P1J (deprecated.. present on older models from 2024 until October 2025.

Recommended to replace with GST40A12-P1J)

Power specifications

Input voltage: 80 ~ 264VAC

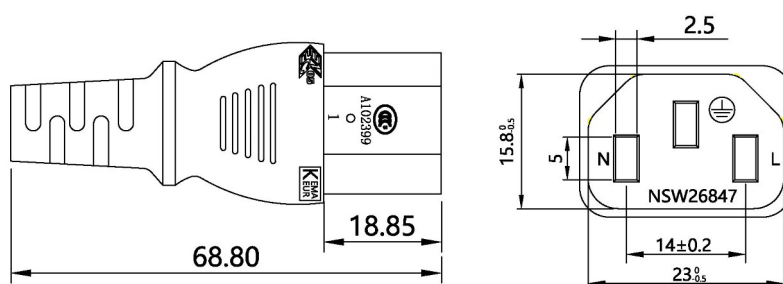
Output voltage: 12V

Max output current: 3,3A

Barrel socket dimensions: 2,1 x 5,5 mm

Factory furnished AC lead

The GR-MEGA comes supplied with a IEC-60230 C13/C14 cable for your country. The so-called “kettle plug”. [\[https://en.wikipedia.org/wiki/IEC_60320\]](https://en.wikipedia.org/wiki/IEC_60320)



Power specification

Please do not use an adapter other than included in the GR-MEGA box. Using another adapter or power source, may cause damage to your GR-MEGA. It is protected against reverse polarity and over voltage, but extreme voltage will still cause damage! The GR-MEGA accepts heavier 12V adapters than the supplied 40W unit, but please contact us before trying! Badly designed power adapters can degrade noise performance, and even damage the GR-MEGA's hardware.

Reading this manual

How to get the most out of this manual:

The GR-MEGA is a powerful and flexible device, but it is designed to be easy to get into. The display and the controls directly next to the display speak for themselves. But this manual offers a full overview of all the controls. This starts in the chapter Global Overview.

This manual also functions as a detailed reference. The Tasty Chips Electronics Youtube channel [youtube.com/tastychips] features tutorials for the GR-MEGA, although this user manual is still more detailed.

In general the flow of this manual is from beginner and global at the start to advanced and specific near the end. Although we felt that we needed to explain some principles before getting to the tutorials.

The first chapter you should probably read is the quickstart chapter. It gets you up to speed with the basics: powering up and getting the first noises out of the GR-MEGA. In the beginning you can just stick to this quick start and basic tutorials. Should you “bump” into things later on, you can come back here to this chapter and get guidance on what part to read, or just Ctrl+F / Cmd+F and use the manual as a reference work.

The Global Overview chapter provides an overview of all physical controls: buttons, knobs, sliders, the display, as well as the sockets on the back panel.

Since the GR-MEGA has sound engines that require more explanation than for instance analog synthesis or wavetable synthesis, we’ve written an engine chapter especially for this purpose: “Sound Engines”. It is recommended to read this if you are not familiar with granular synthesis or spectral synthesis, aka. “phase vocoding”. The sound parameters are described for each sound engine.

Once the user is familiar with how to tweak sound parameters, we explain how data is organized in samples, patches (presets), and projects, and various other data types that can be useful. This is the chapter GR-MEGA Data. Logically, this is followed by how to load and save all these data types in the next chapter.

(Network) File sharing is probably the easiest way to transfer samples and other data between your MEGA and your PC/Mac. This is explained in the chapter File Sharing.

We then explain all the options in all the menus, which is the longest chapter.

Only then are we ready for the tutorials.. Although, you can actually skip directly to this chapter after having read the quickstart, we do recommend getting familiar with the data types first.

To get the most out of your GR-MEGA, we’ve added a chapter about polyphony.

The later chapters deal with tables of control functions, button combos (shortcuts), and MIDI command tables. A chapter about frequently asked questions and troubleshooting concludes the manual.

Warranty

The GR-MEGA comes with a 2 (two) year warranty on factory defects. Warranty is effective from the date of shipping of the unit. There is no need to register your unit with us. You buy it, you own it, even second-hand. As the owner you're always entitled to the unit's warranty, within the limits specified in this chapter.

For instance, if you buy a second-hand unit that's 1 year old, you still have 1 year factory warranty left.

"Factory defects" covers:

- Missing parts (see previous section)
- Broken parts (for instance: cracked screen, broken buttons, knobs or sliders)
- Non-functional unit ("dead on arrival")
- Semi-functional unit with serious defect (for instance: inability to access any USB stick or USB hard disk, left and/or right channels permanently muted).

In case of such defects, you can reach us at info@tastychips.nl, and claim your unit to be repaired. We'll contact you with all the necessary information for return shipping and will refund all postage costs incurred. Please understand that shipping and repairs may take several weeks depending on the severity of the defect and your location in the world.

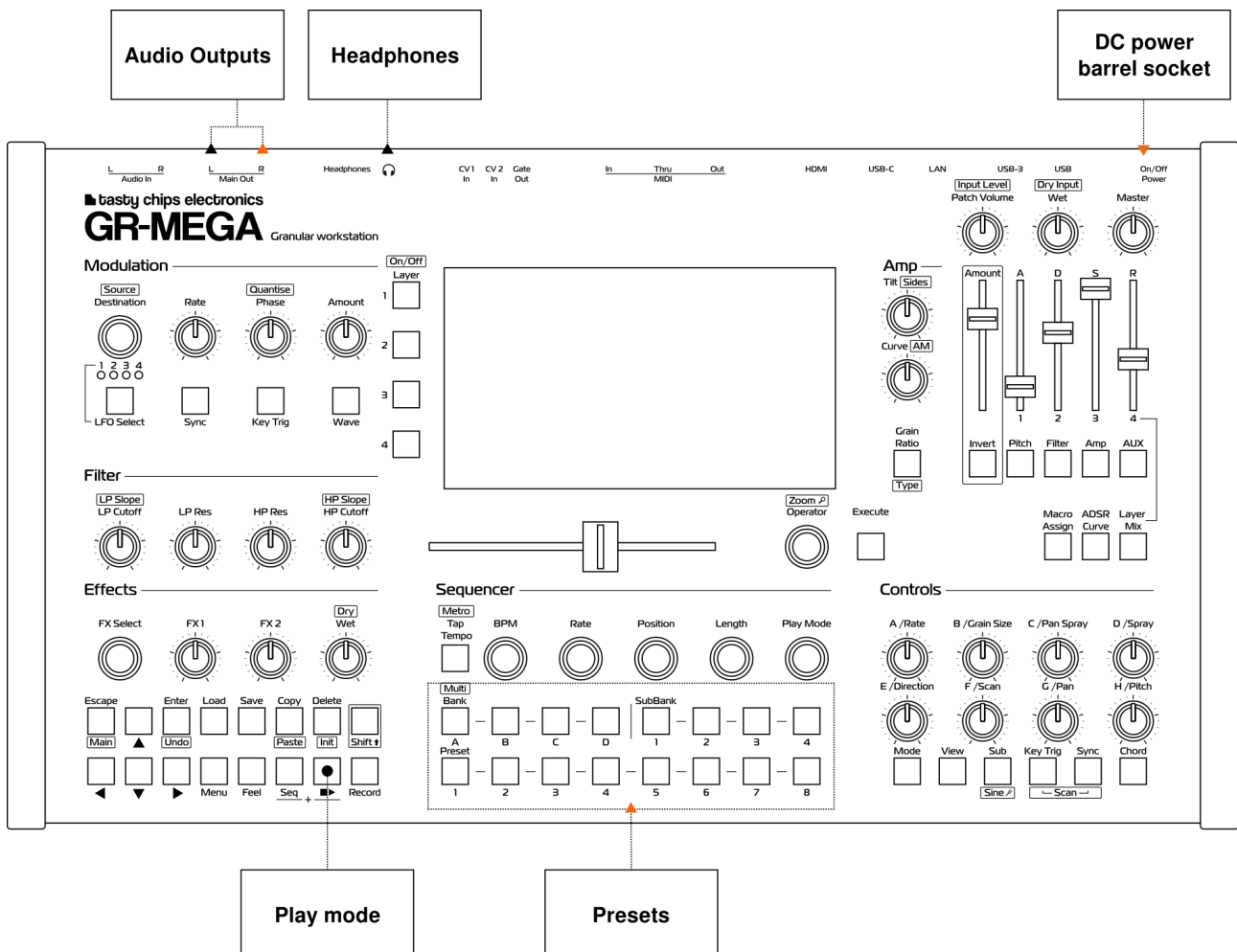
We'll first attempt to repair your unit. If, and only if, the unit is damaged beyond repair, we'll send a new unit.

In some trivial cases like missing power adapter, or defective USB stick, we will send the replacement parts directly to you, because they may be easily replaced.

Note that opening up the unit and tampering will void warranty. There are exceptional cases where we do allow the product owner to open up the unit, typically for a possible quick fix in the studio, but said person will need to have our explicit permission first. Ask here: info@tastychips.nl

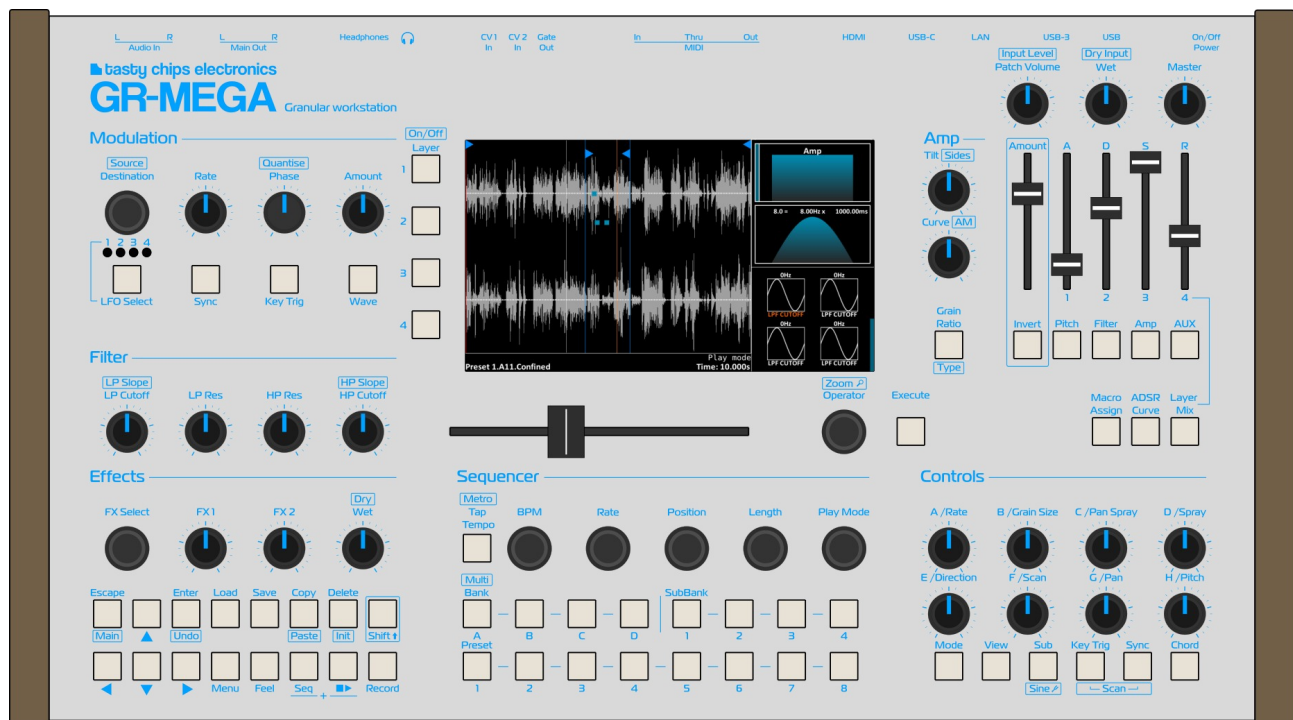
GR-Mega Quickstart

1. Hook up the furnished power brick up to your power outlet.
2. Plug the power brick's barrel jack into the GR-MEGA.
3. The GR-MEGA will now start up, moving through its LEDs one by one. This will take only 2 seconds.
4. After a few seconds more the Tasty Chips logo appears on the screen, quickly followed by progress bar. And then after a few seconds more you'll see the main sample display.
5. Hook up your headphones or your monitor speakers on the back panel. Adjust the patch vol, dry/wet, and master knobs (all three of them) in the top right to suitable levels.
6. Hit the play button, and try the preset buttons to explore other sounds. Enjoy!



Global Overview

Front Panel



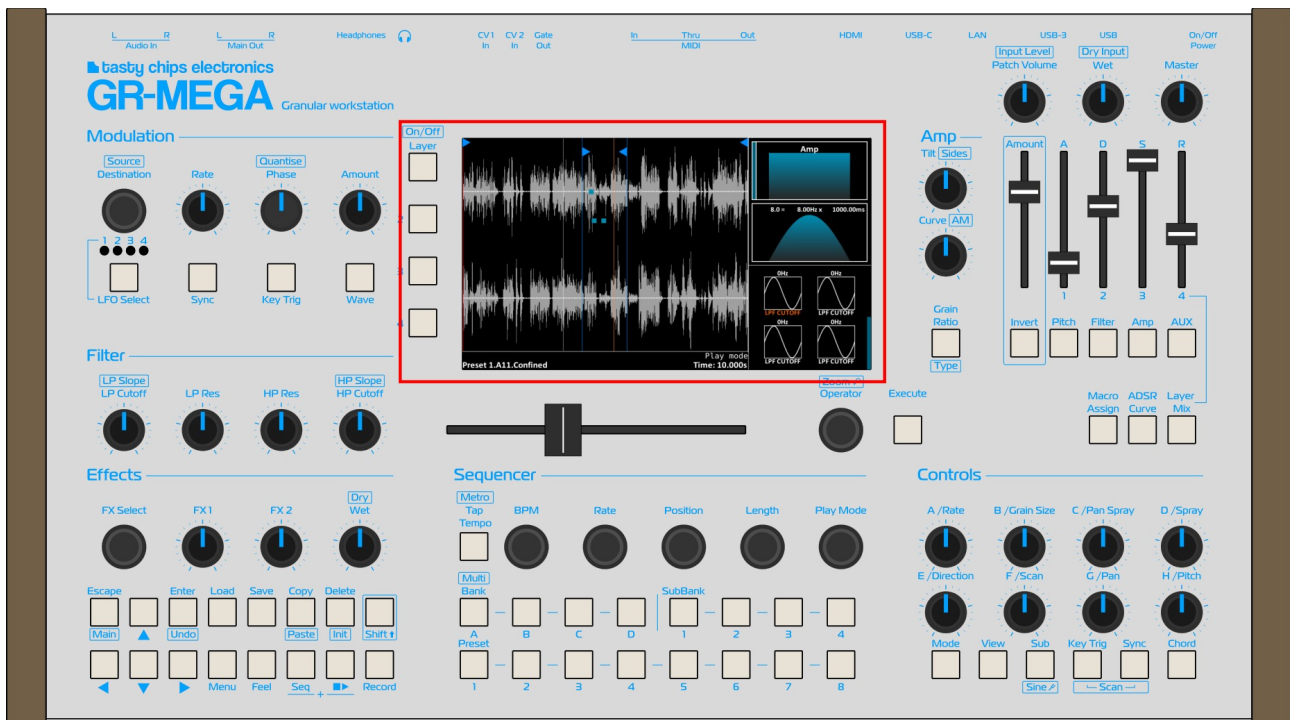
The GR-MEGA front panel offers a rich human interface. Controls are grouped by function. That function is written above the group, along with a separator line. Enough space is present between knobs as to not accidentally touch the neighboring knob.

There's no signal flow represented in the front panel. Some synthesizers have their flow laid out in a line from left to right: VCO → VCF → VCA. The GR-MEGA doesn't have this, but instead has the focus on the central screen. It's easy to start there, and then work your way outwards, starting with the presets (on the bottom) and play button (on the bottom left).

Many controls have got 2 or more functions. Typically you can access the secondary function by holding down [Shift]. Sometimes alternate functions are accessed through modes. These are controlled by physical buttons, encoders or GUI menu controls. Shift functions are mentioned in the text on the front panel, and are enclosed by a rectangle.

The following manual sections describe the function groups one at a time, in descending order of importance.

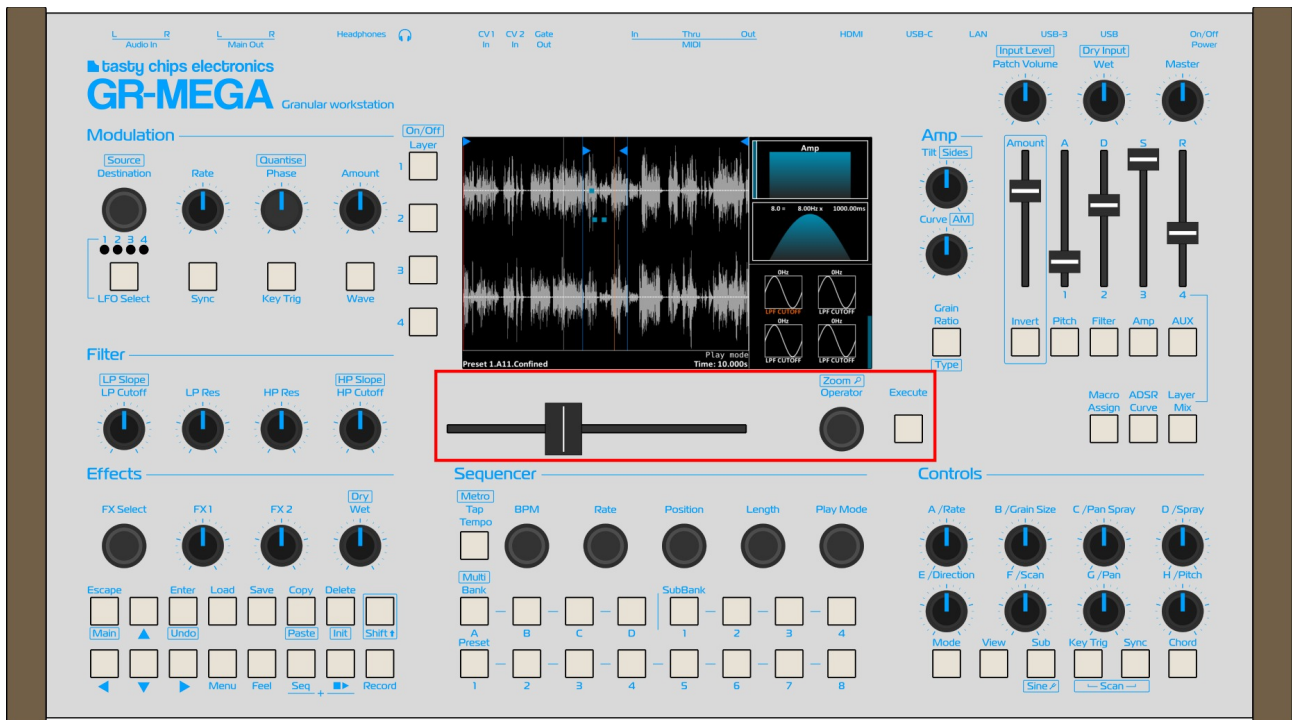
Display



The GR-MEGA display is 7" full color and 1024x600 resolution. It is dimmable, to be suitable for low light conditions. There's a perspex window on top that is also scratch proof. A new GR-MEGA unit comes furnished with an additional plastic screen protector on top. This can be removed by peeling.

Directly left of the display are 4 layer buttons. Focus on a layer by pressing. Toggle it by holding it down or using Shift + layer button.

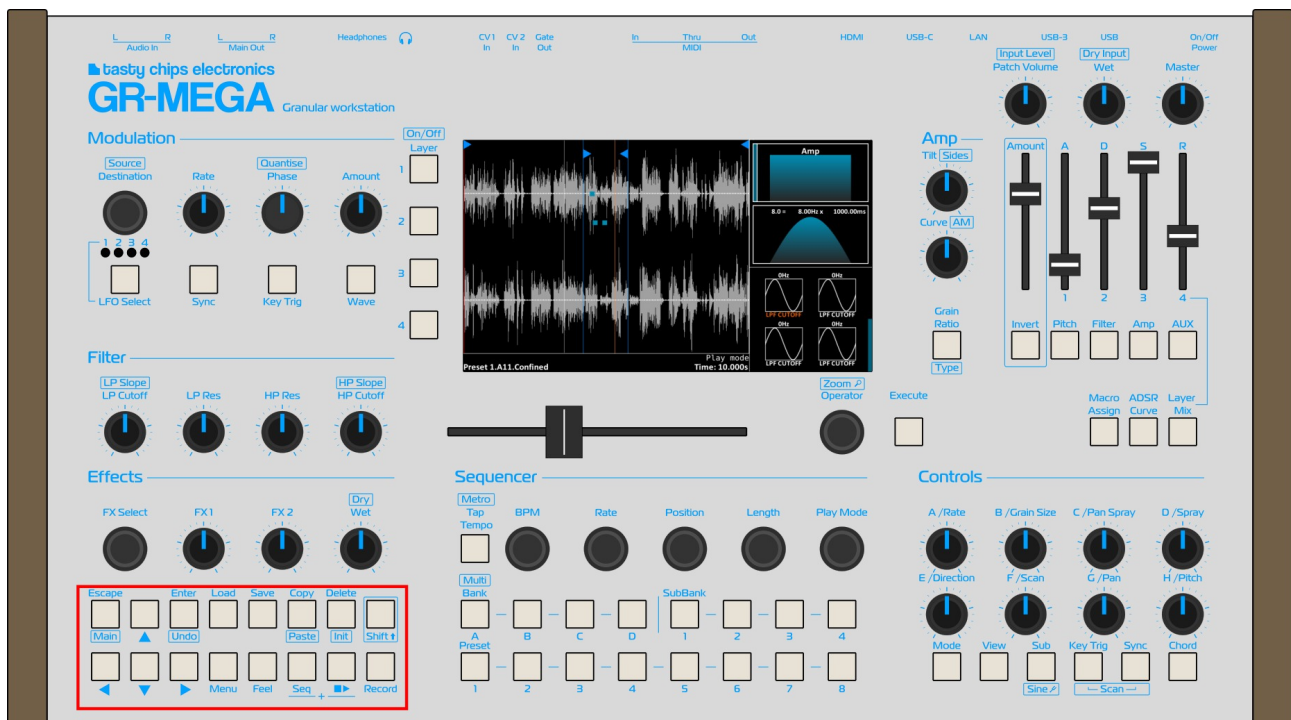
Position slider and Operation encoder



Directly underneath is the horizontal position slider. The travel of the slider is 100 mm. The position slider is essential for many things. First and foremost for setting play position in your samples. While zoomed in, hold [Shift] and move the slider to scrub through the entire sample. It is also used to dial in values in menus.

Next to the slider there's the operation encoder ("Op enc") and the Execute [Exec] button. Turn (Op enc) to select an operation like cropping or setting loop points, then press Exec to execute. Hold [Shift] and turn (Op enc) to quickly zoom in and out. (Op enc) is also used to step values in menus. Holding down shift will typically mean fine adjusting.

Menu, navigation, editing & disk access



On the bottom left of there's a group of buttons for menu navigation, and disk access.

From left to right:

Navigation: On the far left there are the arrow buttons: left, right, up, and down, as well as escape, and enter buttons. These are used to navigate through menus and dialogs. Escape always escapes from the currently focused widget (button, text box, or slider), or escapes from the menu or dialog completely. The enter button is used to enter menus and text boxes (to start entering text).

[Load] and **[Save]** buttons call dialogs to load and save, and when said dialogs are open, press again to perform the actual load or save operation.

[Menu]: toggles between menu and main screen. Shortcut: Hold down menu button and press preset buttons 1 through 8 to enter one of the menu tabs directly!

[Feel]: allows you to check all button, knob and slider settings without actually changing them. Just hold down this button and move or press the control you want to check. The value is displayed on the bottom of the screen. The **[Feel]** button can also be used to query the function of a GUI control. This will show a help bubble.

[Copy]: used to copy, and to paste: hold down Shift and then press Copy. It of course copies different things depending on the menu tab you are in, or if you are in the main screen; then it copies patches.

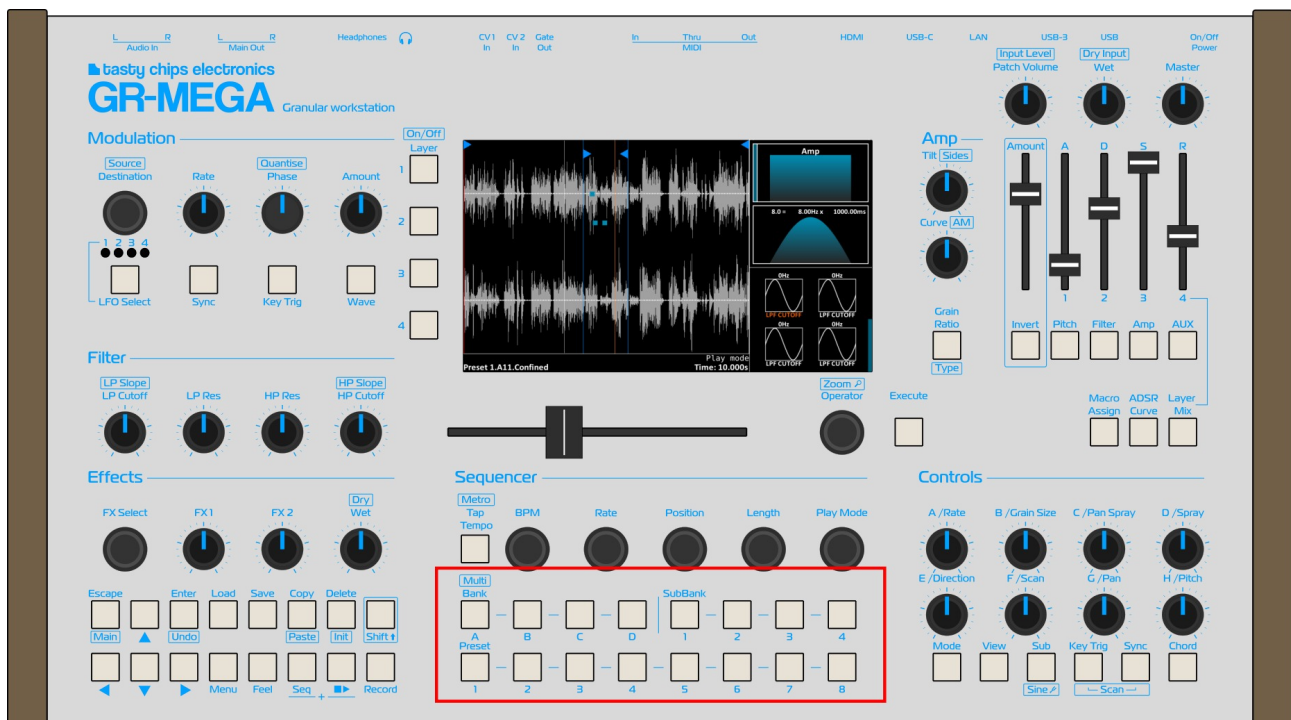
[Seq]: used in conjunction with Play or Record buttons. Hold it and press Play to play the sequencer instead of just playing a single continuous note. Hold it and press Record to record MIDI notes into the sequencer.

[Delete]: used to delete or initialize data. In the main screen it initializes the patch. In menu screens it initializes different things such as sequencer notes, mod matrix rows. Inside a text box it acts like a backspace.

Play [▶]: plays and stops (press again) a single continuous note. Hold [Shift] and press [▶] to audition the current sample. Can be used in conjunction with sequencer as well. Hold down [▶] for 3 seconds to turn all sound off, like a panic button.

[Record]: record audio (when enabled in sampling menu), or record sequencer when Rec button is held down. Press Record again to stop recording.

Presets & banks

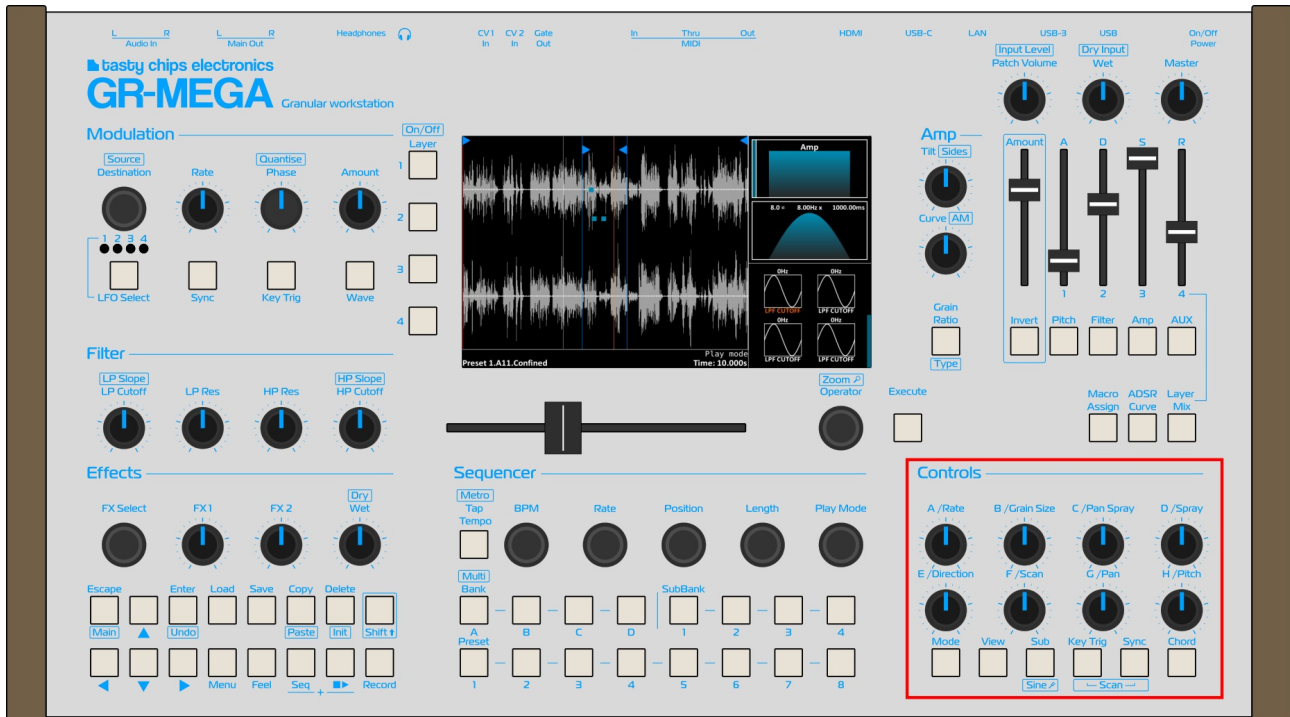


On the bottom center there are 16 buttons. They're marked: Bank, SubBank, Preset. Each bank has 32 presets, each subbank has 8 presets. In total you can directly switch to 128 presets with these controls.

Holding [Shift] while pressing one of these buttons will switch to multi timbral patch stack 1 .. 16. In the system menu you can toggle "Fast MT Select" to reach all 128 stacks, by pressing bank, subbank, and preset similar to setting a preset (starting firmware 1.1).

These buttons can also be used to change the sequencer position (lower row) or bar (upper row). [Seq] + [▶] have to be lit.

Sound engine controls (ABC knobs)



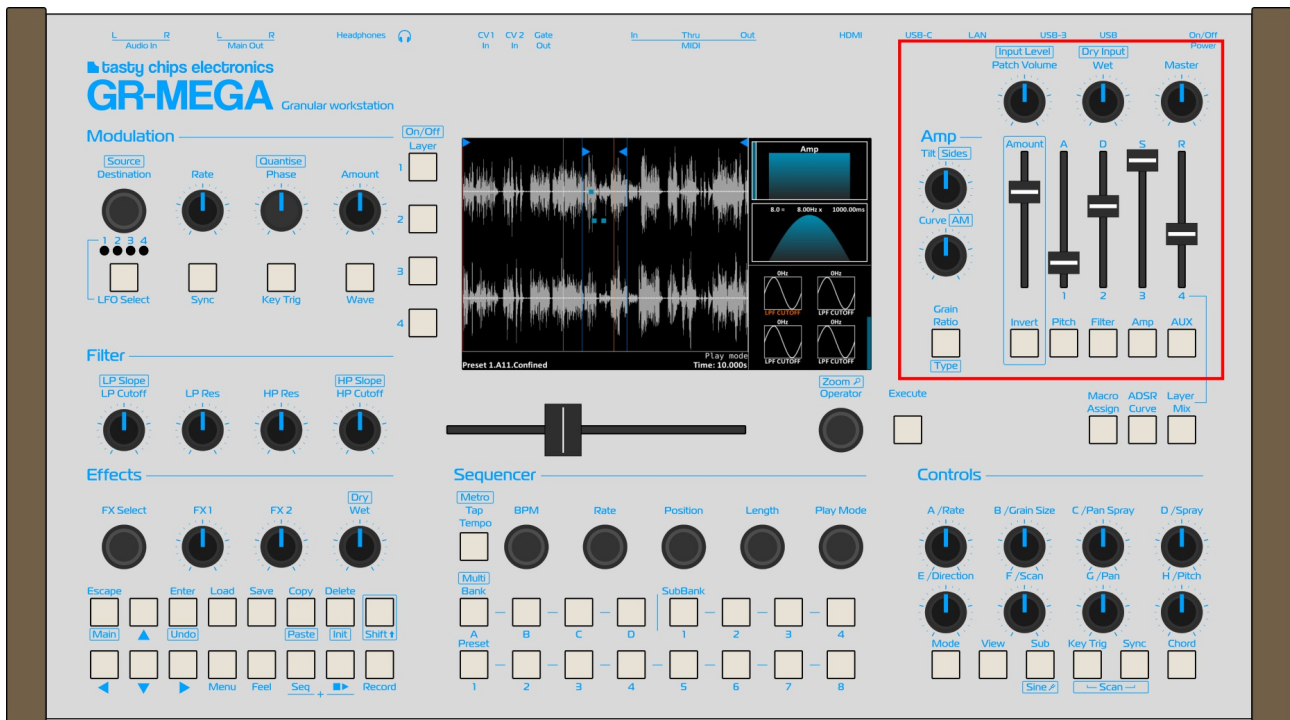
On the lower right you have 8 knobs. These control granular parameters, and are fun and powerful to tweak.

On the bottom there are buttons toggle sync of these parameters, change synth engine, and toggle chord mode.

The top knobs are unipolar: simply taking the setting from 0 to max. The bottom row is bipolar and has a “center detent”. They snap at 12 ’o clock. These have functions like panning and direction: stuff that has a neutral center.

Each engine has different functions for these knobs, but they are often very similar. Scan and Pitch are always the same. Once you get to grips with these knobs in one engine (say granular), they make sense in other engines as well (for instance sampler).

Amp section



In the top right we find the grain window and envelope controls.

At the very top there are 3 knobs. These are volume setup, and mixer controls: Patch level, Wet/Dry, and Master:

* (Patch level) sets patch volume. Hold Shift to change audio input level. This is recalled from a patch.

* (Wet/Dry) sets wet granulated volume. Hold Shift to set dry audio input volume. Useful when the MEGA is used as a (granular) live audio FX unit. This is a system wide setting.

* (Master) sets the master volume. This is a system wide setting, and a hard control that always shows the actual master volume.

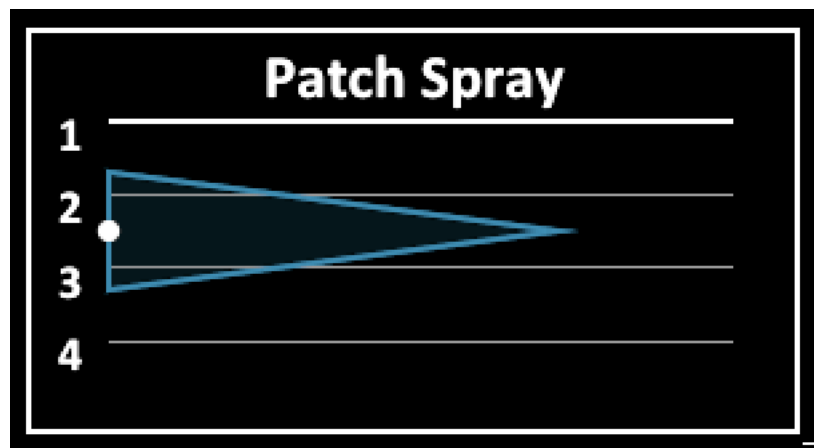
The curve and tilt knobs control the grain window. Use shift with these knobs to tweak the window even more. [Shift] + [Ratio mode] button (directly underneath these knobs) to toggle between GR-MEGA window type and GR-1 type for compatibility (and fine control over the attack and release timings).

The envelope controls are amount + ADSR. There are several buttons to switch to Pitch, filter, amp, or aux envelope. You can also invert the envelope and you can set the curve on every stage of the envelope. Press the [ADSR Curve] button for this.

The [Layer Mix] button this turns the ADSR sliders into volume controls for layers 1, 2, 3, and 4.

Hold [Shift] and press [Layer Mix] to access “patch spray” functions. This is where grain counts are boosted based on which part of the screen you focus on. In the top right of the screen, you’ll see a little window “Patch Spray”, that displays the center of each layer along with a blue triangle denoting the patch spray and intensity. The white ball denotes the patch bias.

- * Amount: Patch bias (white ball, center of triangle)
- * A: Patch spray (width of triangle)
- * D: Patch spray intensity (height of triangle, how many grains are added)

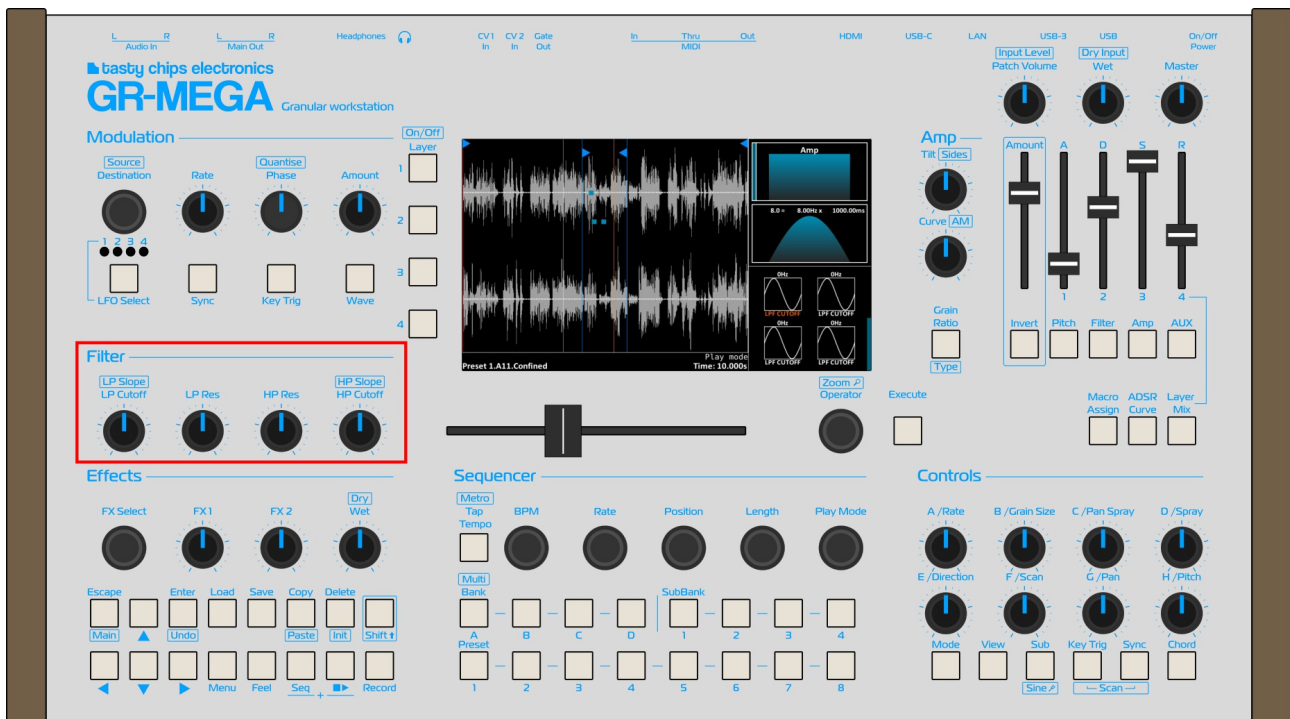


When [Macro Assign] is lit, the functions of the faders are as follows

- * Amount: macro 1 level
- * A: macro 2 level
- * D: macro 3 level
- * S: macro 4 level
- * R: macro 5 level
- * [Shift] + Amount: macro 6 level
- * [Shift] + A: macro 7 level
- * [Shift] + D: macro 8 level
- * [Shift] + S: macro 9 level
- * [Shift] + R: macro 10 level

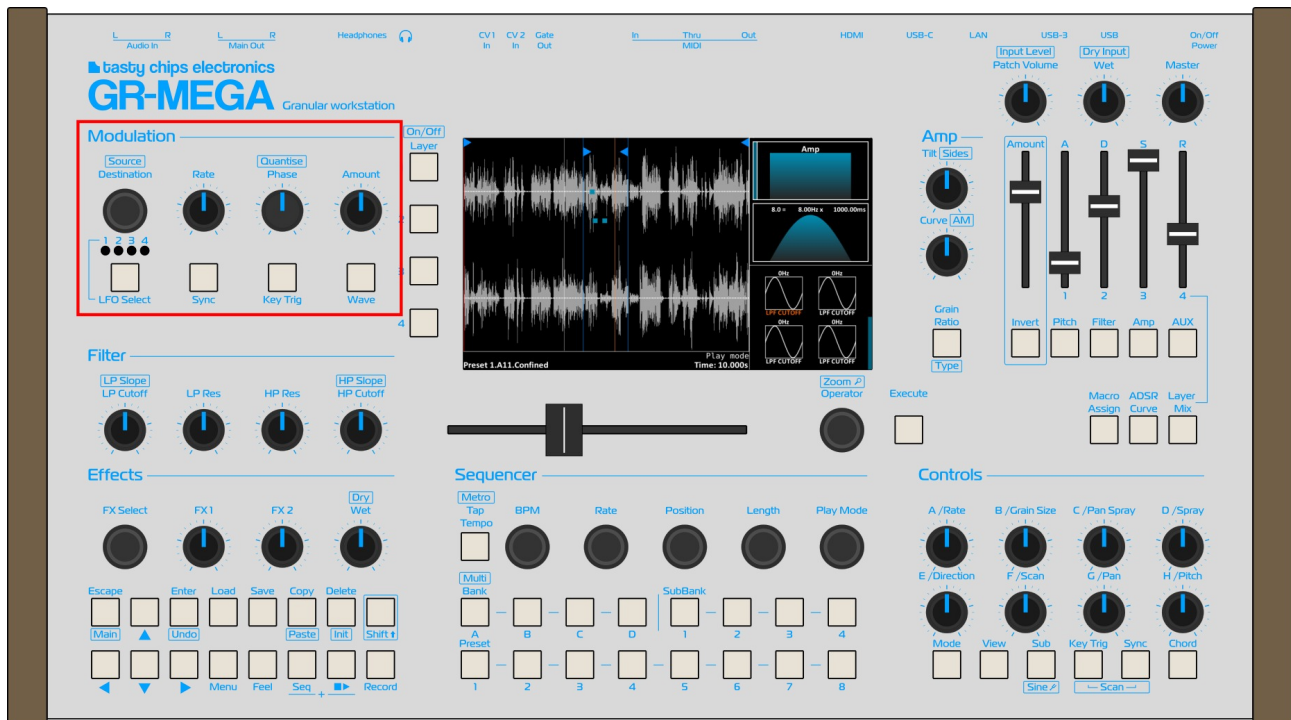
The env Amount fader has one final additional use as a level fader for feeding back synthesizer output back to the recorded audio.

Filter controls



On the left there are 4 filter knobs: LPF cutoff, LPF resonance, HPF resonance, HPF cutoff. There is one LPF and one HPF filter per voice.

Modulation section



On the top left you'll find 4 knobs and 4 buttons. These allow you to:

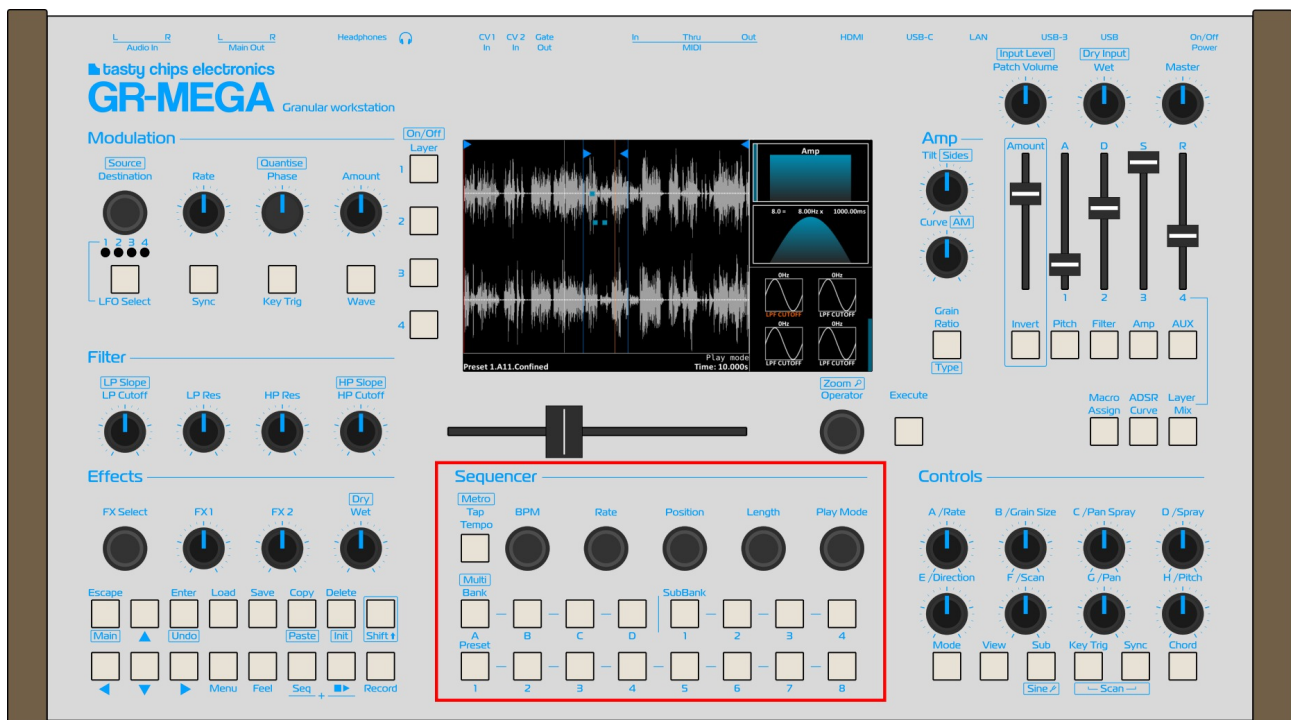
Top row - knobs

(Destination)	Select destination
[Shift] + (Destination)	Select source
(Rate)	Set LFO rate 0..50Hz, set LFO rate division when sync
(Phase)	Set LFO phase
[Shift] + (Phase)	Quantize LFO phase
(Amount)	Set LFO amount, bipolar: left = -100%, right = +100% ..or set modulation source amount when source other then LFO is active.

Bottom row - buttons

[LFO Select]	Select LFO 1..4
Hold [LFO Select] + (knob)	Assign destination to current LFO
[Sync]	Toggle LFO sync
[Key Sync]	Cycle LFO keysync: OFF, LEGATO, ON
[Wave]	Cycle through LFO waveforms: sine, saw up/down, triangle, random, square
[Shift] + [Wave]	Toggle unipolar and bipolar

Sequencer section



In the bottom center there's a row with a [Tap Tempo] button and 5 knobs: BPM, Rate, Position, Length, Play mode. Most speak for themselves. Rate sets the time signature: $\frac{3}{4}$, $\frac{4}{4}$, $\frac{6}{8}$, etc. Play mode does forward, reverse, random, etc.

Secondary functions of the sequencer knobs:

- [Shift] + (Rate): increase or decrease modulation slew time
- [Shift] + (Position): transpose sequencer
- [Shift] + (Play): increase or decrease sequencer drunkness

Drunkness influences the chance and of a misstep, and the size of the misstep.

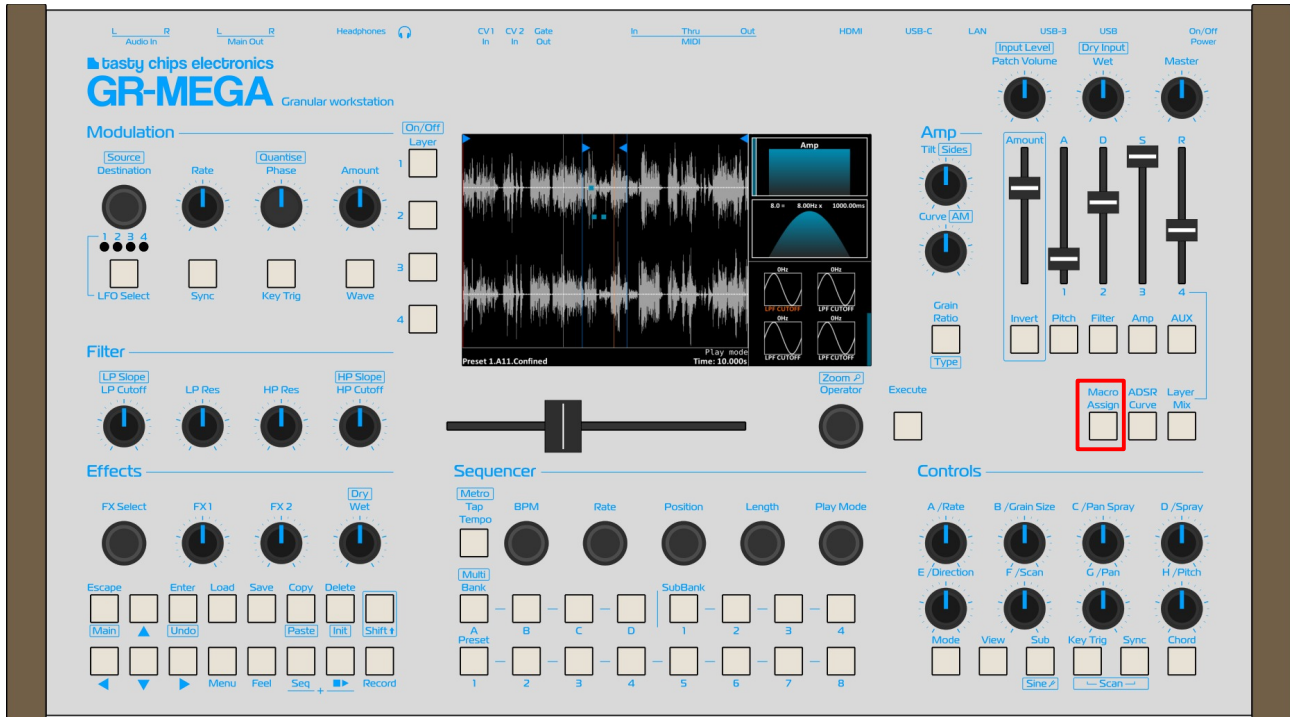
Press [Tap Tempo] 4 times to accept a new tempo. [Shift] + [Tap Tempo] toggles the metronome ON or OFF.

The preset buttons can be used to jump to steps in the sequence. You must then first enable the sequencer (see below), and then press [Seq] once. It will starting blinking. Now you can select steps. If you are in the sequencer menu [Menu] + [Seq], the preset buttons automatically function as step buttons.

Hold [Seq] and press Play [▶] to toggle the sequencer ON/OFF for the current layer. Hold [Seq] and press Layer buttons 1..4 to toggle the sequencer ON/OFF for a chosen layer. Pressing Play [▶] after this will then only start the sequencers for the layers it was enabled in.

Hold [Seq] and press the bank, and preset buttons to switch to another preset, while the sequencer is running.

Macros



Macros are used to control multiple parameters with a single fader. The GR-MEGA has a complete macro system with start/end ranges, curve, and polyphonic modulation. It has a macro menu for a complete oversight of all 10 macros. But you don't have to enter the macro menu at all. You can setup macros by only using knobs and buttons and the main screen.

Press and release [Macro Assign], then use vertical faders (also with [Shift]) to control Macro1..10

Hold [Menu] + press [Macro Assign] to access the macro menu. Works like the matrix menu, including copy, paste, delete functions

Macro levels (and their modulations) are controlled by the 5 vertical faders. Use [Shift] to access macros 6..10.

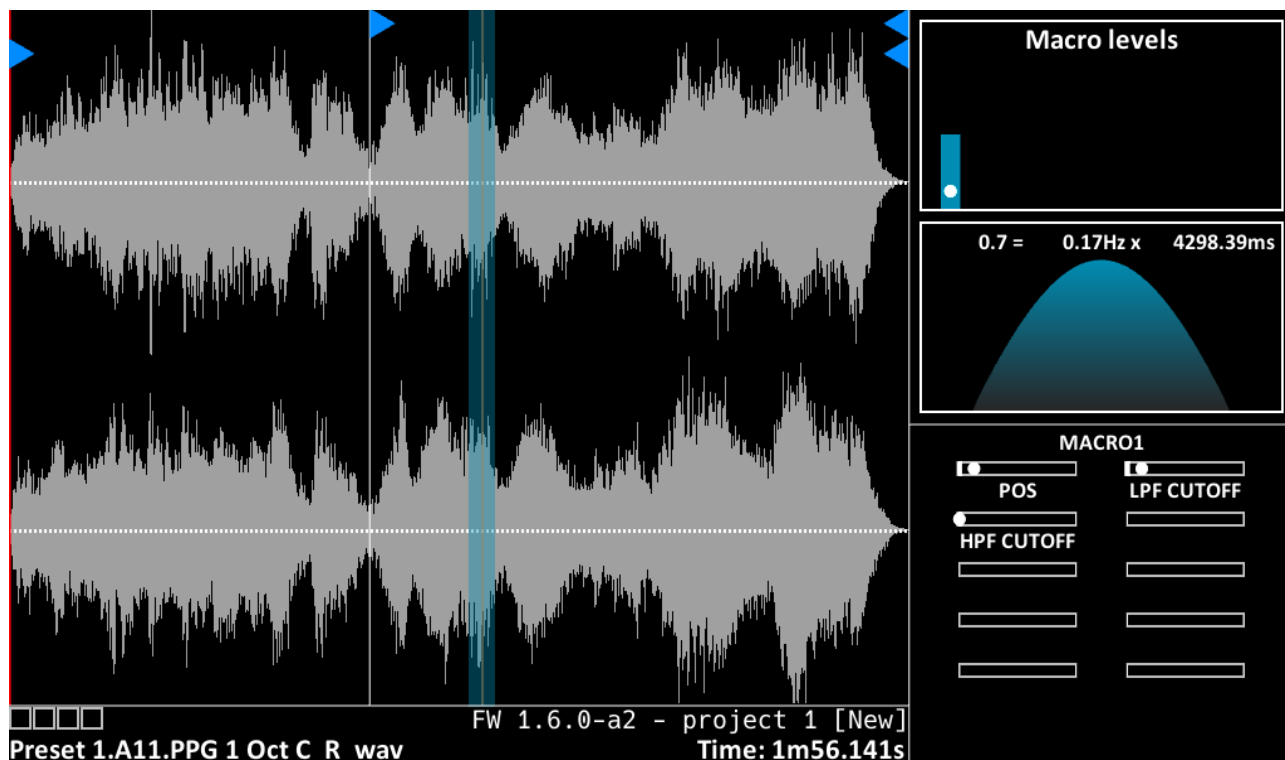
Assignment parameters hands-on by holding the [Macro Assign] button and turning a knob of your choice. All 140 modulation destinations are supported. This includes FX parameters. This adds the assignment to your current macro. Keep turning the knob to expand the start, end range.

Hold [Macro Assign] and press ▲/▼, or turn (Op enc). This steps through available Macros 1..10

Hold [Delete], and press [Macro Assign]. This deletes currently selected macro.

Hold [Macro assign], and press [Invert]. This swaps start and end. In order words, it reverses the range.

The macro side panel that shows all macro destinations for the currently touched macro. Use [Shift] + [View] to change side panel.

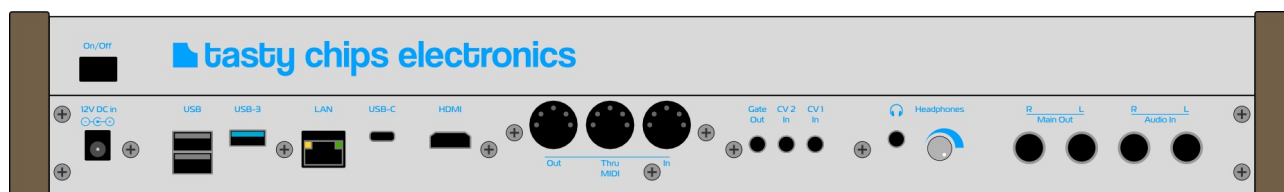


As you can see in the screenshot, the top right section displays the macro levels. The little white balls denote (global) macro modulation. On the bottom right, the macro parameters for the current macro (in this case macro 1) are displayed, also with modulation, and polarity.

When [Macro assign] is lit, hold down [LFO Select], and move one of the vertical sliders to assign a modulation source to a macro. You will now see a little *white ball* gliding along the blue macro level bar.

Macros are configured and stored per patch. We don't know if this will be made global some day, but maybe 10 macros for an entire project isn't enough.. In any case you can copy patch templates to other patches to have the same macros per patch.

Back Panel



CV & Gate

There are 2 CV inputs on the GR-MEGA, which can be used as mod matrix modulation sources. The inputs have the typical Eurorack -5V .. +5V range. The inputs are protected and buffered.

The CV's are modulation sources. They're suitable for LFO speeds and low (sub-bass) audio range.

The gate output provides a gate signal (5V) when the GR-MEGA receives one or more note-on messages, or when its [▶] button is active. The gate output is protected against over current (shorting to ground).

Audio Outputs (L/R)

These are two balanced ¼" (6.35mm) TRS (Tip Ring Sleeve) phono jack sockets, that output the left and right channels of the master mix. We recommend you only use TRS cables, as TS cables are sensitive to noise, especially when they are long. The full output level is "pro level": +4 dBu. The outputs are protected by clipping diodes.

It has close to 114 dB signal-to-noise (SNR) and an almost completely white noise floor.

Headphone connection

This is a 1/8" (3.175mm) TRS (stereo) mini jack socket. Next to it is the volume knob.

The volume level is sufficiently loud, although a bit less than some dedicated external headphone amplifiers. Still, please be careful and keep in mind you can damage your ears over time.

NOTE: The headphone amp is optimized for 32 ohm headphones. High impedance headphones will sound quite soft.

Audio IN (L/R)

These are two balanced ¼" (6.35mm) TRS (Tip Ring Sleeve) phono jack sockets, representing the left and right input channels. We recommend you only use TRS cables, as TS cables are sensitive to noise, especially when they are long. The full input level is "pro level": +4 dBu. TBV!

It has close to 114 dB signal-to-noise (SNR) and an almost completely white noise floor.

Note that these inputs are not pre-amplified. They are not suitable for hooking up your guitar or microphone directly. Please use a pre-amp if you want to do this. Note that amplified output levels should remain below 5VPP, to avoid damage.

MIDI

The GR-MEGA has full set of 3 DIN-5 MIDI sockets: MIDI In, MIDI Out, and MIDI Thru. MIDI thru is a hard thru, which means it has almost no latency (in the microsecond range). MIDI in optically isolated as per MIDI standard, meaning there's no chance of noise entering the GR-MEGA from a connected MIDI controller.

DIN MIDI is still common and very reliable, but if you want to send many automations from your DAW, or large sysex dumps, it is recommended to use USB C instead.

USB-A

The GR-MEGA has 3 USB A ports:

1 x USB 3.0 port, which offers 0.9A and up to 5GBps speed. Suitable for fast USB sticks or even drives, and for supporting power hungry audio interfaces (to be supported in future firmware versions).

2 x USB 2.0 ports. These are intended for low power devices such computer keyboards, and MIDI controllers.

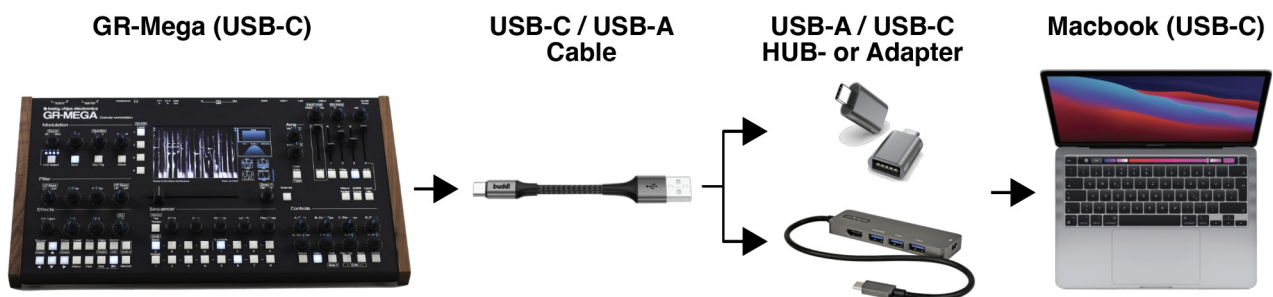
The USB A ports offer host mode only. This means that you can only connect USB devices here. Since a PC and Mac are typically USB hosts, that means they cannot be connected here! Use USB C instead.

USB C

The USB C port is intended to connect your PC/Mac to. It runs at USB 2.0 speed: 480Mbps max. It supports MIDI data, multichannel audio in and out, and file sharing. Use it to hook up your PC/Mac (with your favorite DAW) to your GR-MEGA.

If you use a modern Mac with USB C ports, please hook it up as follows. A direct USB-C connection will not work! You will need a cable + adapter combo. We suspect this has something to do with incomplete USB 2.0 support on the Mac's USB C ports. As far as we have tested, PC's don't have this issue, and can be hooked up directly with a single USB C cable. Please note that the hub or adapter/dongle should be on the MAC side!

[GR-MEGA's USB-C port] ↔ [USB C-to-A cable] ↔ [USB A-to-C adapter] ↔ [Mac]



This port is resistant against injection of noise from your PC/Mac. This means it resists injection ground noise from the connected machine, and also against so-called “ground loops”.

Multichannel USB audio, is stable since firmware v1.3, but when using on Mac, it is recommended to setup as follows: System menu → IO → USB C Mode → AUDIO ONLY. If you choose AUDIO + MIDI + FILES, there may be audio drop outs when using high polyphony and many effects.

This port does not power the GR-MEGA. The only way to power the GR-MEGA is via the 12V socket on the extreme right of the back panel.

This port does not provide power to devices. Use the USB A ports for this.

HDMI

The GR-MEGA can output its internal display over HDMI, so you can hook up a big monitor or TV. The resolution is 1024 x 600, 60 Hz.

On older GR-MEGA's (pre October 2025) please note that you will need to:

1. power down,
2. then attach HDMI,
3. power up again.

On newer models (starting October 2025) you will be able to switch between internal and external display from within the system menu.

The internal display will then only display the splash screen GR-MEGA logo, nothing else. All the action will be on the external monitor.

Should you wish to use to the internal display again, then power down, detach HDMI, and power up again.

We could potentially support beamer-friendly 720p resolution, but we'll need users to "chime in" for this feature. Please contact us if you're interested.

HDMI allows digital multi-channel audio output as well. It is not used at this point, but again, please contact us if you're interested.

LAN

This is a standard 1 Gbps (gigabit) RJ-45 ethernet interface. It can be used to get firmware updates from our website, and for file sharing: accessing the files on the GR-MEGA from your PC or Mac.

Power button & DC adapter

Once the power is plugged in,

- * the GR-MEGA will immediately start up (pre October 2025 models),

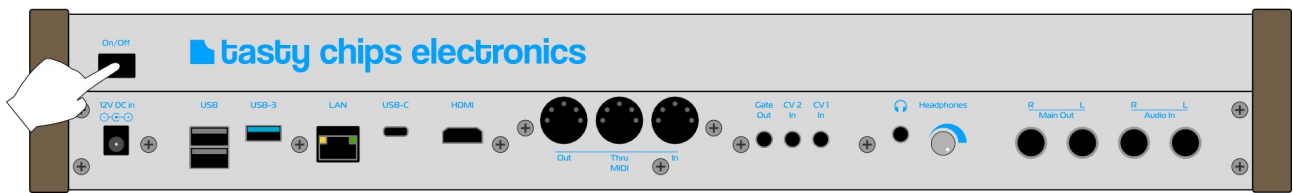
- * or run a LED test and enter stand-by (models from October 2025 and newer).

Powering up (models pre October 2025):

1. Hook up the DC adapter to AC power.
2. Insert the adapter's barrel socket into the GR-MEGA's barrel socket.
3. The GR-MEGA will now power up and show a Tasty Chips logo on the display. It will load the last used project, and then show the main screen with a sample waveform.

WARNING: Do not use an adapter other than the one that comes with the GR-MEGA. If you insist, please contact us first.

Shutting down



The barrel jack should not be pulled from the socket without first doing a clean shutdown. This can lead to loss of data! A clean shutdown is done as follows:

1. Make sure the GR-MEGA is up and running. The display should show the graphical user interface.
2. Push and hold the power button, and hold it for 2 seconds. If you let go, the shutdown will be canceled.
3. The GR-MEGA will now save any unsaved changes, if you configured it to do so, and fully shut down. The button lights will dim down slowly, and turn off completely. Early models dimmed them down to just barely visible. Newer models turn them off completely.
4. When the lights have dimmed down, you can unplug power if you want. If you don't unplug, the GR-MEGA is in stand-by. The display, CPU, and all connected USB devices are powered off. It will consume about 4 Watt, or about half of a modern LED bulb. The CPU fan will stay on, but we may change it to turn off in future firmware.

Powering up from stand-by

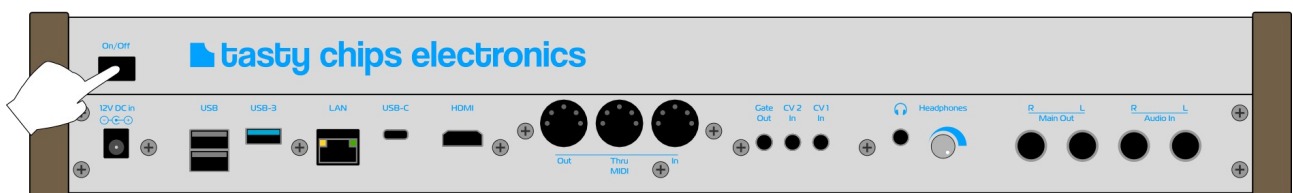
Shortly press the power button. The buttons will light up after 2 seconds. Then wait about 12 seconds before the display activates.

Powering up (models October 2025 and newer):

1. Hook up the DC adapter to AC power.
2. Insert the adapter's barrel socket into the GR-MEGA's barrel socket.
3. The GR-MEGA will run a LED test, and then enter stand-by.
4. Press the power button on the back.
5. The GR-MEGA will now power up and show a Tasty Chips logo on the display. It will load the last used project, and then show the main screen with a sample waveform.

WARNING: Do not use an adapter other than the one that comes with the GR-MEGA. If you insist, please contact us first.

Shutting down



The barrel jack should not be pulled from the socket without first doing a clean shutdown. This can lead to loss of data! A clean shutdown is done as follows:

1. Make sure the GR-MEGA is up and running. The display should show the graphical user interface.
2. Shortly press the power button. A confirmation dialog is prompted. Confirm the shutdown dialog.

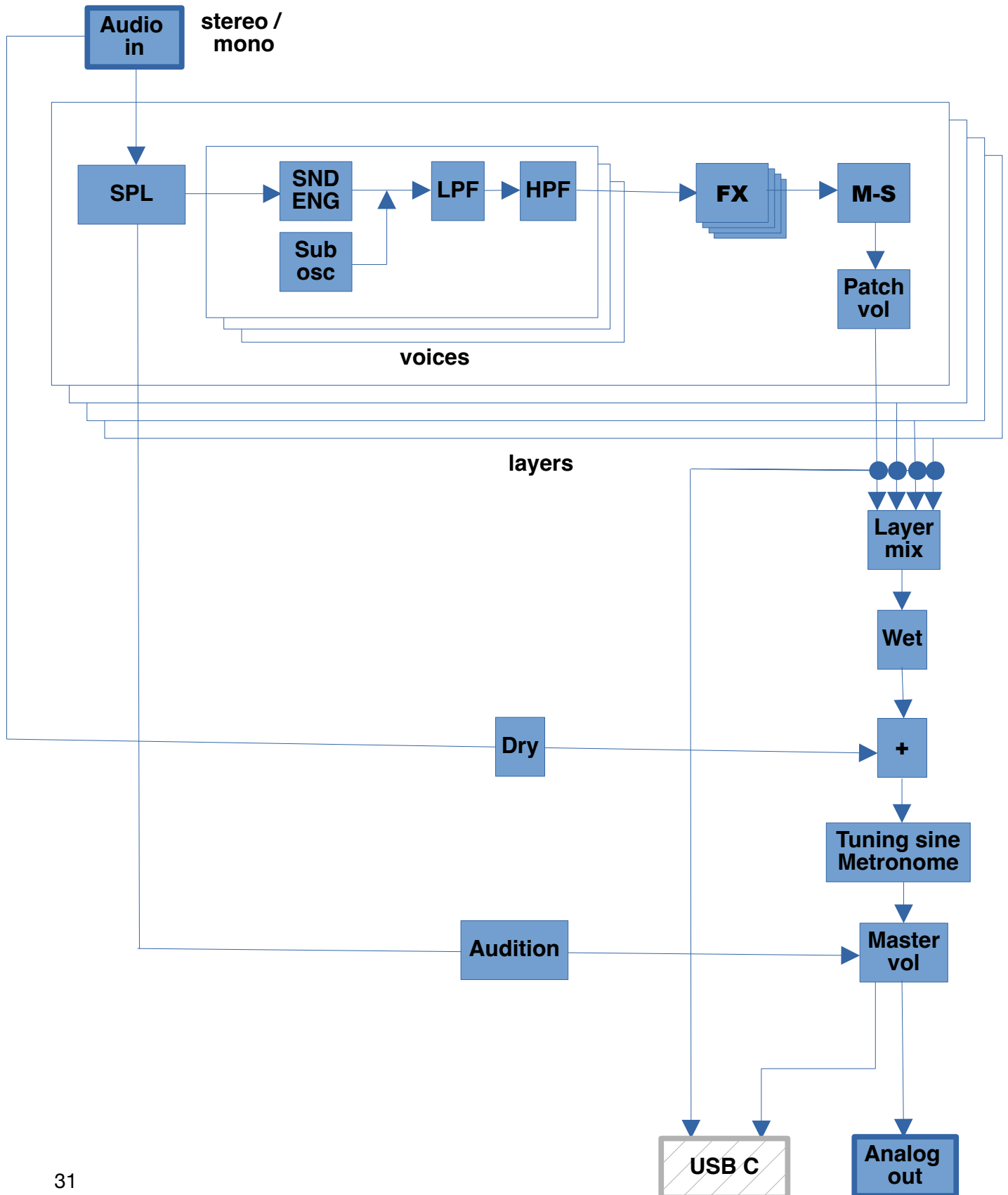
CAUTION: Holding the power button for 5 seconds will cause a HARD shutdown, where your work will not be saved, and possibly data corruption could occur.

3. The GR-MEGA will now save any unsaved changes, if you configured it to do so, and fully shut down. The button lights will dim down a bit, and turn off after 2 seconds.
4. When the lights have turned off, and the GR-MEGA splash screen has disappeared you can unplug power if you want. If you don't unplug, the GR-MEGA remains on stand-by. The display, CPU, CPU fan, and all connected USB devices are powered off. Stand-by power less is than 1 Watt.

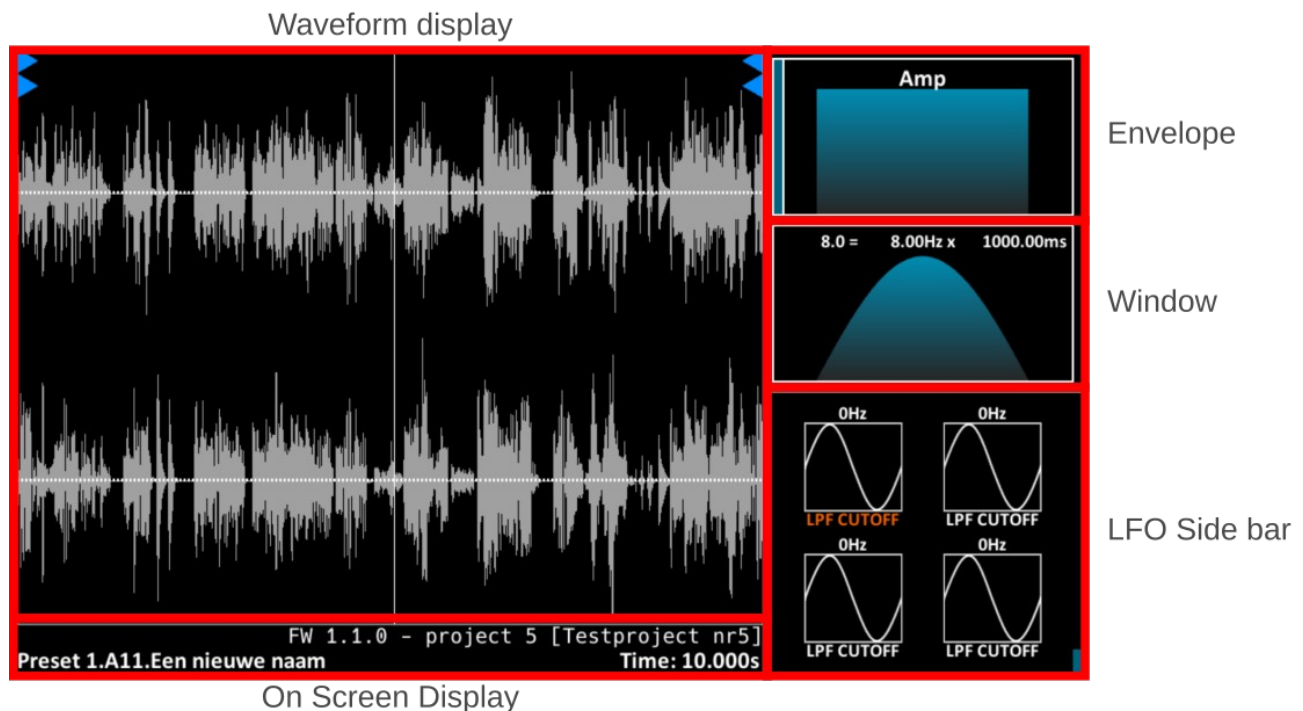
Powering up from stand-by

Shortly press the power button. The buttons will light up immediately. Then wait about 10 seconds before the display activates.

GR- Mega signal path



The main screen



Waveform

The biggest part of the main screen is dedicated to displaying the sample. The view mode can be changed from time series to spectrogram using the [View] button. The sample can be zoomed ([Shift] + turn (Op enc)) and scrolled (using ← and → arrows and [Shift] + Horizontal slider).

OSD

The On-Screen Display or OSD is the lower bar beneath the sample waveform. It displays messages like “Spray 0.0023s” and such. Every knob that is turned will display its value here. The same goes for most buttons. Also status messages such as “Loaded” or so will appear here.

The preset name, slot number and code (i.e. A-1-2, for bank A, subbank 1, preset 2) are displayed here. The amount of time in the (zoomed) sample waveform is also displayed here.

Envelope

On the top-right you can find the envelop display. It displays the envelope that’s currently highlighted on the buttons underneath the ADSR section: [Pitch] , [Filter], [Amp] , or [Aux].

Window

Directly underneath the envelope you can find the grain window display. This displays the shape of the window and the density, rate, and grain size in the equation:

$$\text{density (grains)} = \text{rate (grains/s)} \times \text{grain size (s)}$$

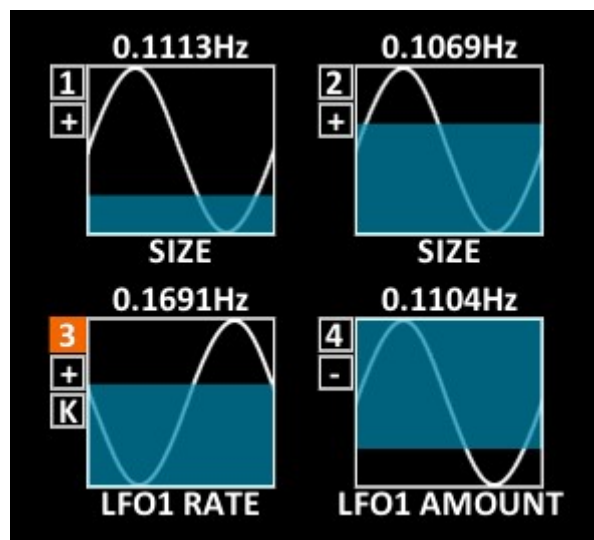
When the spectral engine (phase vocoding) is used, this changes to the amplitude spectrum.

“LFO” (modulation) sidebar

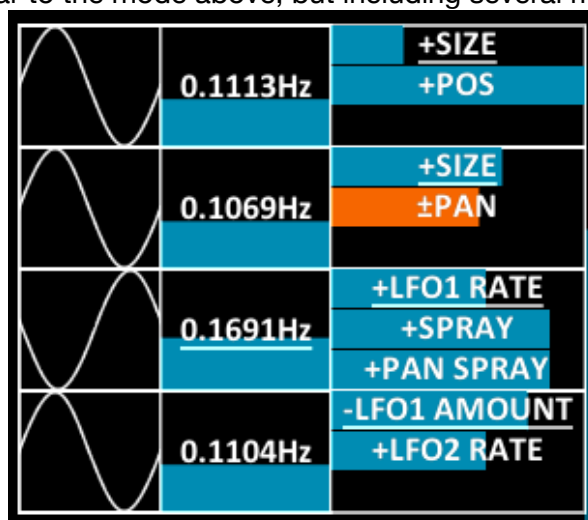
On the lower right the LFO's, CV's, and other information related to modulation is displayed. The display mode for this section can be cycled with [Shift] + [View], or by holding down [View] and turning the (Op encoder).

Currently the LFO sidebar supports 3 modes:

* “Four LFO” which displays waveforms, frequencies and rates, polarity, and amounts, and key sync.



* Detailed Four LFO: similar to the mode above, but including several mod destinations



* 10 destinations: shows the recently used modulation destinations and their summed values.



Sound Engines

The GR-MEGA has 5 sound engines. Each one has different applications. It is primarily a granular machine (the primary engine), but the other engines are full featured as well. We designed each engine to have interchangeable controls. For instance, the Scan control will have the same function in almost every mode.

Chord mode can be used in all modes.

Sound Engine Controls

To summarize, here are the knob functions for all the sound engines:

	Granular	Granular Slice	Sampler	Tape	Spectral
Big Slider	Position	Position	Position	Target position	Position
A	Rate*	Rate*	- - -	- - -	Amp thresh
B	Grain Size*	Grain Size*	- - -	- - -	FFT Size
C	Pan Spray	Pan Spray	Pan Spray	Pan Spray	Amp smear
C + Shift	Pan Spray Distribution	Pan Spray Distribution	Pan Spray Distribution	Pan Spray Distribution	Amp smear
D	Spray	Spray	Spray	Spray	Phase smear
D + Shift	Spray polarity	Spray polarity	Spray polarity	Spray polarity	FFT Reducer
E	Direction	Direction	Direction	-	Freq shifter
F	Scan	Scan	Scan	Scan	Scan
F + Shift	Scan (fine)	Scan (fine)	Scan (fine)	Scan (fine)	Scan (fine)
F + View	Scan (snap at +-0.25 increments)	Scan (snap at +-0.25 increments)	Scan (snap at +-0.25 increments)	Scan (snap at +-0.25 increments)	Scan (snap at +-0.25 increments)
G	Pan	Pan	Pan	Pan	Pan
G + Shift	Mid-Side	Mid-Side	Mid-Side	Mid-Side	Mid-Side
H	Pitch (-1 .. +1 octave)	Pitch (-1 .. +1 octave)	Pitch (-1 .. +1 octave)	Tape Slew	Pitch (-1 .. +1 octave)
H + Shift	Pitch (-1 .. +1 semitone)	Pitch (-1 .. +1 semitone)	Pitch (-1 .. +1 semitone)	Tape Slew	Pitch (-1 .. +1 semitone)

H + Chord	Pitch snapping	Pitch snapping	Pitch snapping	Pitch snapping	Pitch snapping
H + View	Pitch spray	Pitch spray	-	Tape Slew	-

*) Depending on selected Ratio mode. Listed are the controls for Free ratio mode.

Pitch snapping, using the [Chord] button, works in two different modes:

- A. No voicing data present → snap to semitone
- B. Voicing data present → snap to chord notes.

Voicing data is set in the Patch menu → Voicing section.

Granular Sound Engine

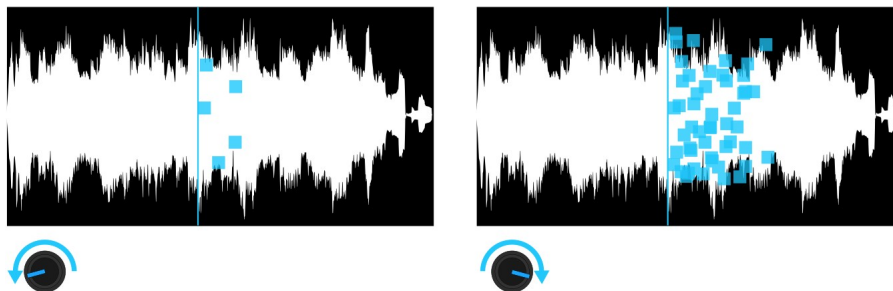
Granular mode is the default engine of the GR-MEGA. It can be used for pads, to make massive spatial clouds, to scatter sounds, and for primitive 90's Jungle style time stretching that works well on non-transient material.

The highly complete and accurate implementation used in this engine opens up the world of micro sounds, where rate can control pitch, and window shape can act as a filter, but that's only the start. A good understanding of microsound can give complete timbre transformations. If you're interested in a deep dive into the world of micro sounds, there's the book by Curtis Roads – *Microsounds*, ISBN-13 : 978-0262681544

Granular mode is the most flexible of all the modes, evidenced by its large amount of parameters:

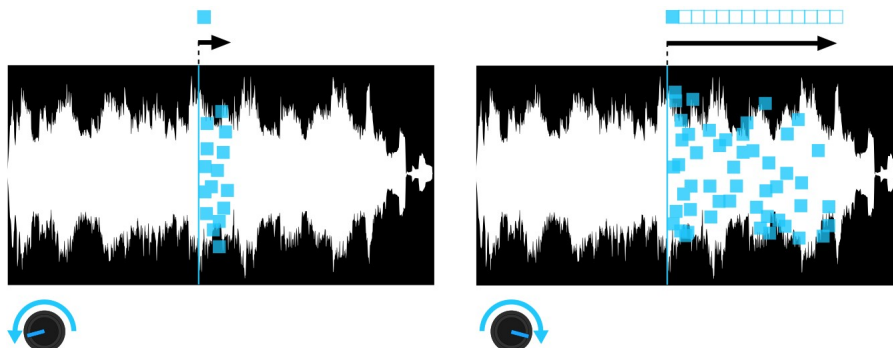
Rate

The rate parameter controls the amount of grains per second (Hz). The amount can be set between 0.1-1000 grains per second, with a maximum of 128 grains playing simultaneously, per voice.



Grain Size

The grain size parameter controls the playing length of a grain. The length can be set between 5-5000 milliseconds.



Rate, size, and density

Internally the granular engine only understands the above two parameters:

- * Rate
- * Size

To measure how many grains are playing at the same time, we have Density:

$$\text{Density} = \text{Rate} \times \text{Size}$$

This is also used to measure the density of a granular cloud, or sometimes how much overlap there is between grains.

When the Ratio button is set to “Free”, you control Rate and Size directly, and the Density is a result of this. But other ratio modes allow you to control Density directly and Rate or Size can be the result. It’s even possible to mix in other parameters for creative purposes.

To better understand how these Ratio modes influence the granular scheduling, we’ve added a text display just above the grain window:

density = rate x size display

For instance:

$$3.0 = 30.0 \text{ Hz} \times 100 \text{ ms}$$

Grain Ratio

Pressing the Ratio button will cycle through various grain ratio modes:

Table 1: rate modes

Ratio mode	Knob A function	Knob B function
Free	Rate	Size
DensitySize	Density	Size
DensityRate	Rate	Density
ScanRate	Rate (* Scan)	Size (/ Scan)
ScanOverlap	Rate (* Scan)	Size
TimeStretch	-	Size

As mentioned above, Free is the default mode and allows full freedom.

DensitySize and DensityRate are intended for granular “stretches” where you can keep density constant while tweaking the rate and size with a single knob. This can create powerful rhythmic speed-ups or slow-downs.

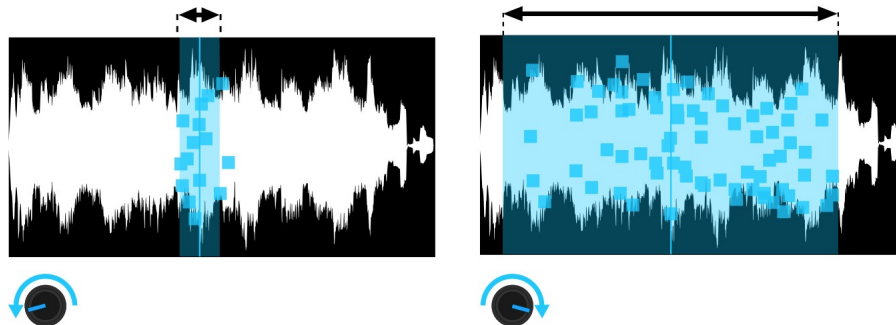
ScanRate is used to achieve the same rhythmic effects, but based on scan speed.

ScanOverlap is used to add more grains when Scan picks up speed, to keep the coverage in the original sample constant.

TimeStretch is similar to the original Akai / 90's jungle type time stretch. This uses 2 grains, that have constant overlap in the *output*, whereas ScanRate and ScanOverlap have constant overlap in the *input* sample.

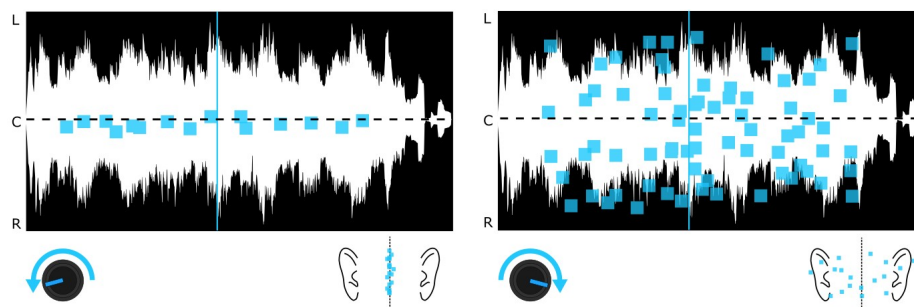
Spray

The spray parameter controls how much a grain's start position is randomized.



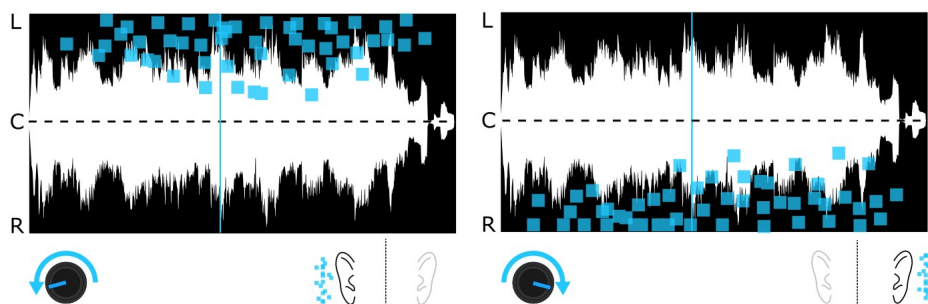
Pan Spray

The Pan Spray parameter controls how much a grain's stereo panning is randomized. 0 means completely centered. Maximum pan spray means a grain can appear everywhere in the stereo image. Using pan spray, even a mono sample can be made to appear *spatial*.



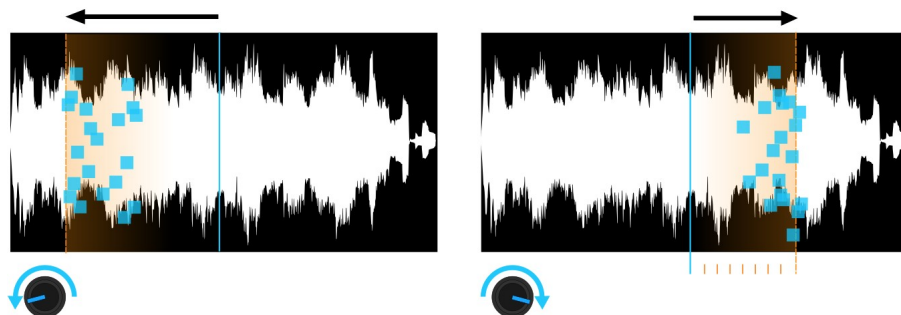
Panning

Shift+Pan knob: The Panning parameter controls how much a grain is panned to left or right. Can be combined with pan spray.



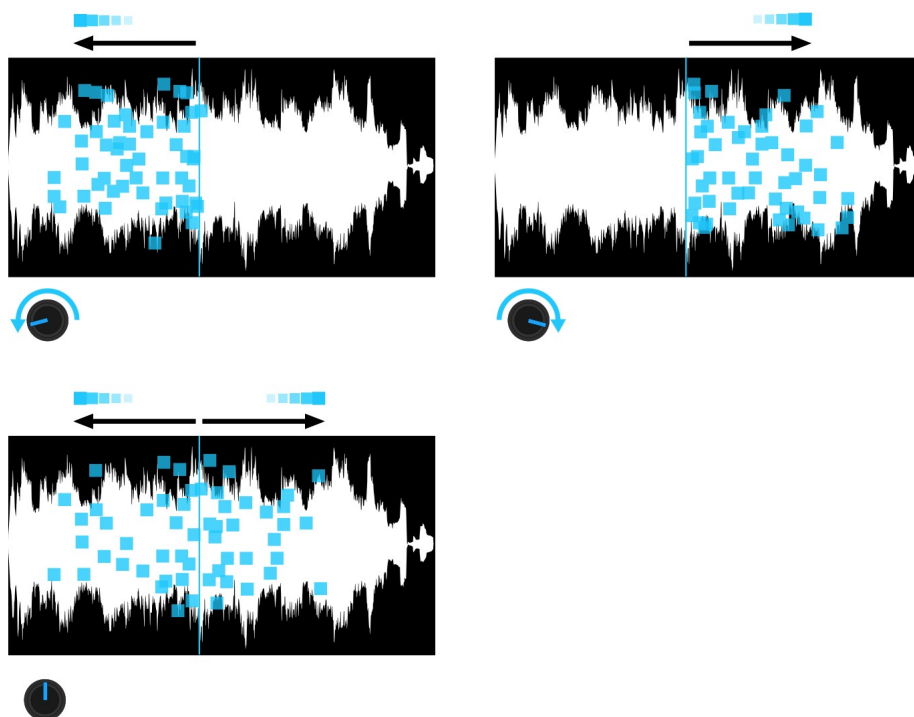
Scan

The Scan parameter sets the movement speed of the grain start position. It can vary from -2 times (reverse motion) the sample play speed to +2 times (forward motion) the sample speed. Scanning responds to stop and loop flags: looping, and pingpong is possible, it can be modulated, and can even be synced to the beat!



Direction

Grains can run in both forward- and reverse directions. Reverse direction can be used for special effect. Combining both can be used to make the sound more lush. Setting the bias completely left plays all grains in reversed direction. Setting the bias completely right plays all grains in forward direction. The center plays in 50/50% in both directions

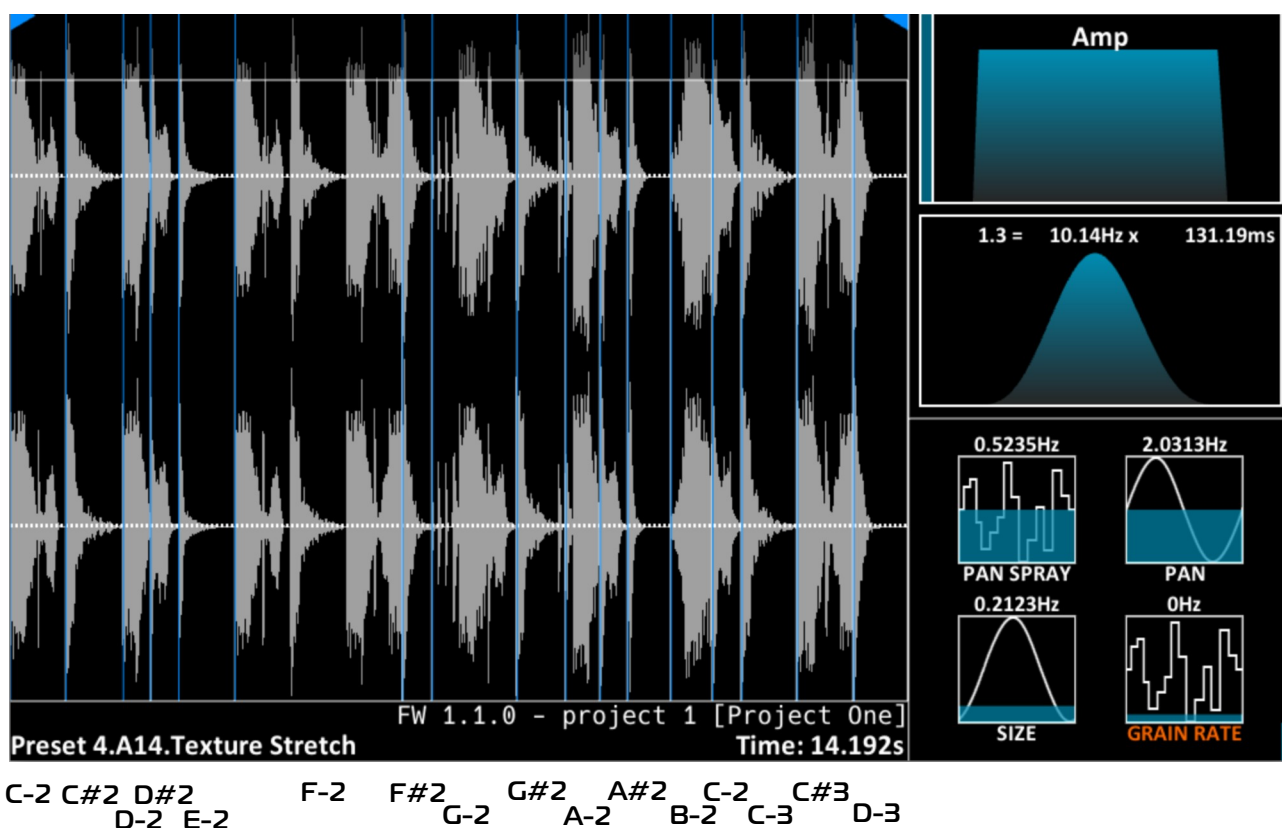


Granular Slice Sound Engine

Granular slice mode is very similar to granular mode, with the exception of the samples being chopped up into slices.

Slices

Slices are automatically mapped to the keyboard: C-2 and up. C-2 plays the left most slice, C#2 plays the neighbor directly to the right, etc.



Almost all the knobs described in Granular mode also work in this mode, with the exception of the position slider and the scan knob. Since you cannot freely move spawn position in the sample in this mode, these controls have no function. An alternative function may be added to them in newer firmware.

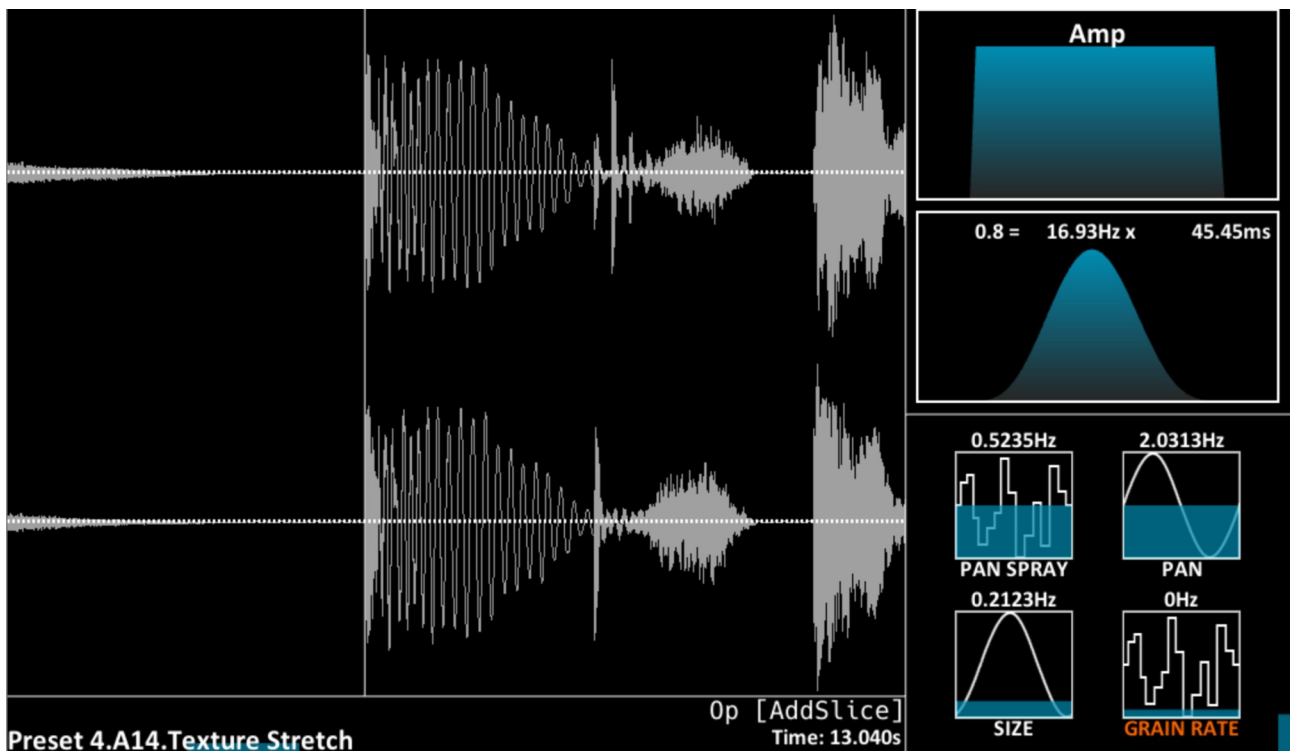
Setting slices (Operation menu)

In slice mode, setting slices is key. This can be done in two ways, manually or automatically. We'll now describe both:

Add slices

Manually move the position slider and use the (Operator) encoder and exec buttons next to it:

1. Drag the position slider to where you want in the sample.
2. Turn (Operator) to "AddSlice"
3. Press the Exec button, a white vertical line now appears, and you can already play MIDI or sequencer note C-2 to activate it.



Auto slice

Automatically, by turning (Operator), and exec button:

1. Turn (Operator) to “AddSlice”.
2. Hold [Shift].
3. Press [Exec]. A lot of slices now appear.

Auto slice sensitivity

Maybe there are too many slices, or too few? You can adjust auto-slicing sensitivity in the Menu:

1. Hold the Menu button
2. Press Preset button 1 to enter the Patch menu.
3. Navigate to the “Scan / Slice” column with the arrow buttons, at the bottom you’ll find “Autoslice sens.”
4. Navigate to the “Autoslice sens.” slider and adjust the value with the position slider.

The screenshot shows the 'Patch' menu interface. At the top, there are tabs: Patch, Projects, Files, Sampling, Sequencer, Matrix, Effects, and System. The 'Patch' tab is active. Below the tabs, there are several settings:

- Patch name: [Empty field]
- Max polyphony: 20 (with a blue progress bar)
- Pitch bend range: 12.00 (with a blue progress bar)
- Glide: 0.0 ms
- Always: OFF
- Sub-osc balance: 0

Below these are three main sections: Voicing, Grain, and Scan/slice.

Voicing			Grain		Scan/slice	
Voice 1	C-4	0.00	Key trigger	ON	Key trigger	On
Voice 2	C-5	0.00	Sync	OFF	Sync	OFF
Voice 3	-	0.00	Grain spawn	Gradual	Scan mode	PingPong
Voice 4	-	0.00	Transpose	0.00	Loop clock sync	OFF
Voice 5	-	0.00	Stealing thres.	0	Looped release	OFF
Voice 6	-	0.00	Local pitch	OFF	Autoslice sens.	50 (with a blue progress bar)
Voice 7	-	0.00	Arp mode	Up		
Voice 8	-	0.00	Anti-aliasing	ON		
Voice 9	-	0.00				
Voice 10	-	0.00				
Voice 11	-	0.00				
Voice 12	-	0.00				

Delete slices

You can delete slices with “DelSlice”:

1. Turn (Operator) to “DelSlice”
2. Use the position slider to stand inside a slide. i.e. right of the vertical slice line.
3. Press the Exec button. The slice will disappear.

Combine DelSlice with holding down Shift: this deletes all slices!
Deleting all slices is often useful before doing autoslice.

Drag slices

You can drag slices with “DragSlice”:

1. Turn the (Operator) to “DragSlice”
2. Use the position slider to stand inside a slide. i.e. right of the vertical slice line.
3. Press the Exec button. The slice will seemingly disappear, but you’re now dragging it with the slider position line!
4. Go to the position you want with the position slider.
5. Press Exec again. The slice is moved!

Sampler Sound Engine

Sampler mode basically emulates a traditional sampler, like the AKAI S-series, or Ableton's Simpler. It is oldschool and can not do time stretching. In principle there's just one grain per voice, but that can be extended up to 12 by using chord mode notes in the patch menu. Sampler in combination with chord mode also has nice periodic properties, which can create a pitched Euclidean sequencer.

Knobs A (Rate) and B (Size) have no function here.

Controls like Spray and Pan spray do the same as in granular. They can create randomized clouds in both stereo field and sample position. Pitch does the same, but note that pitch also equals play speed! Direction works exactly the same. Scan is an interesting control since it only affects the central spawn position for new grains, and can loop and stop and everything, while grains can also do this... Allowing for creative results.

Nice extras: In this mode, all voices are displayed simultaneously. It also supports playing very large samples (up to an hour).

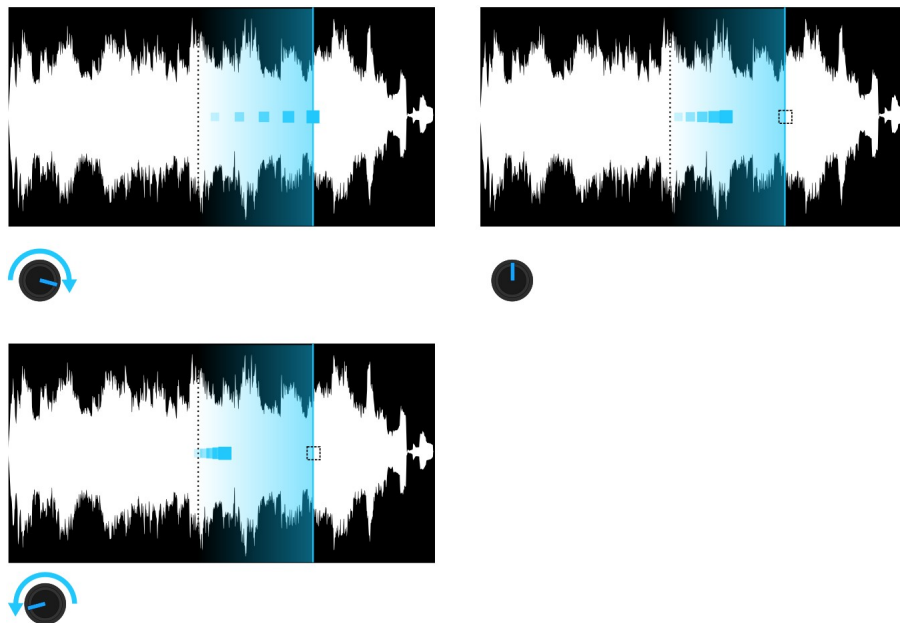
Grains follow loop flags (markers) like how scan follows them in other modes, including loop, pingpong and one shot modes. This means sample looping is supported, and a note off can released them from the loop: Patch menu → Scan/Slice → Looped release. Note that this kind of oldschool sample looping requires proper loop markers at zero crossings.

Tape Sound Engine

The tape engine simulates an analog play head moving over tape. It operates much like sampler mode, but the play position now controls the play speed, and hence also the pitch. You can easily perform scratches like on vinyl. All position and scan modulation is supported, so scratching can be fully automated.

Tape slew

In tape mode the Pitch knob has now got the function of “slew”. This means how slow or fast the tape head catches up to the modulated position:



Chord mode (in Tape Mode)

When chord mode is active (lower right: Chord button), there can be multiple play heads (grains). Each will have a different pitch like set up in the chord in the patch menu. This can give a pretty wild, but harmonic twist to scratching. The first chord note (TBV: or was it the lowest) always tracks the position. The other chord notes are just pitch-bent copies!

Spectral Sound Engine

This mode allows smooth time stretches. Super long “Paul stretch” style ambient stretches where material is slowed down a thousand times. It also allows auto tuning while preserving the timing. However, it is not intended to be a DJ tool. This engine does not accurately preserve vocals, and has significant ringing. It is instead intended to spectrally manipulate and distort, to your heart’s desire. Think experimental IDM.

Once again, like in all other engines, position can be moved freely without any bumps.

There are no grains in this mode. There’s just blocks that are processed in the “frequency domain”, meaning you can very easily manipulate the spectrum using the knobs A through H.

Position and scanning are the main control for this mode. Polyphony is limited to 3 voices per layer, because of the latency of the underlying Fast Fourier Transform (FFT).

Because this engine is quite different from the others, we’ll discuss the knobs and modes that affect it one by one:

Rate knob (A) – amplitude threshold

This sets an amplitude threshold. Turn it up to reduce the harmonics, and eventually only leave the fundamental. Nice for going all whistly. Can be modulated in newer firmware.

Size knob (B) – FFT size

Sets the FFT block size. This is not continuous and takes jumps: 256, 512, 1024, 2048, 4096, 8192. Small sizes have less bass and get ringy more easily, especially when used with the FFT reducer knob. Although the sound is relatively bumpless, this control cannot be modulated. Note that 8192 is MONO! The other sizes are stereo.

Pan spray knob (C) – Phase smear / Reducer

Phase smear is a continuous control that can add progressive amounts of “smear” to the sound. This can be used to turn transients into slush, and an “T” into an “F”. Very effective for ambient soundscapes. Use in combination with big FFT size.

Hold Shift to use the FFT reducer. This turns your sound into lo-fi MP3 / 90s Realaudio[tm] galore!

Pan spray (D) – Amp smear

A continuous control that Smears the amplitude spectrum. Turn to the left to sharpen the spectrum.

Direction knob (E) – Direction

Not implemented at the time of writing. Potential to reverse playback of the block in randomized fashion.

Scan knob (F) – Scan

Just normal scanning. If scan = 0 and there's no position movement the sound can bluntly loop through the FFT block, but it can still be randomized by phase smear!

Pan knob (G) – Pan

Just normal panning

Pitch knob (H) - frequency shift

The pitch knob now does a frequency shift. You can easily get very metallic timbres this way.

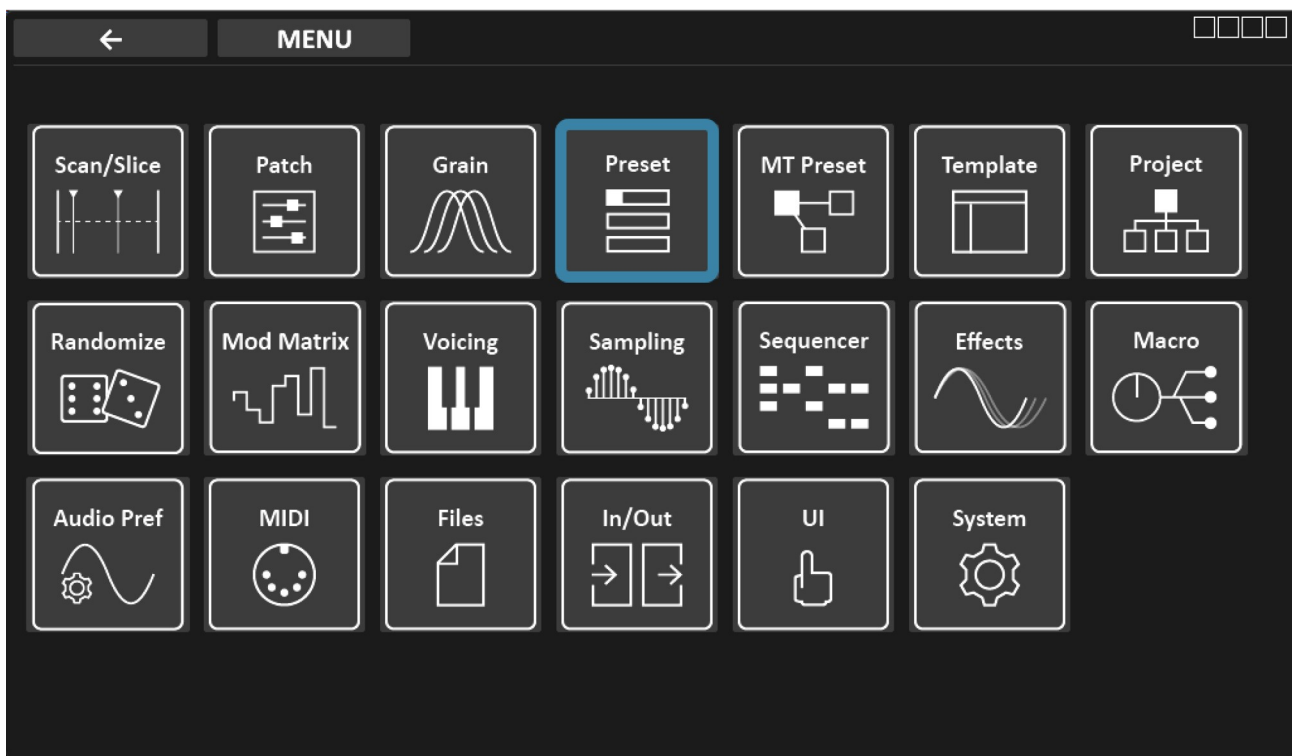
Chord mode (in Spectral mode)

This basically adds pitch-bent versions of the playing sound while completely preserving timing. There's almost no added CPU cost. This means: while you can have 3 voices per layer, you can multiply this by 12!

The menus

Pressing the [Menu] button gets you here. Pressing [Menu] again will exit to the main screen. You are presented with sub-menus represented by tiles: “Patch”, “Project”, etc. Use [←] [↓] [→] to highlight a tile. Press [Enter] to enter the menu. Press [Escape] to exit to the tile menu, and [Escape] again to return to the main screen. Shortcut: Use the [Menu] button to quickly toggle between any menu and the main screen.

If you have mouse or touchscreen connected you can click on the back GUI button [←], same as the physical [Escape] button. The GUI button at the top right displays the name of the current tile. You can click this to quickly cycle through menus, instead of returning to main menu and choosing from there.



Patch menus

The patch menus are:

- General: just called “Patch”, the top left tile in the menu
- Voicing: pitch and pitch quantization
- Grain: settings specific to the granular sound engines
- Scan/slice: settings related to syncing, triggering, looping scan and slice settings

Patch menu (General)

Patch name: the name of the patch, of course.

Sample name: the name of the sample. Use the [←] GUI button in between Name and Sample name to copy the sample name to preset name. This will come in handy.

Comment: up to 100 characters of comments for this patch.

Polyphony: slide this from 1 (monophonic) all the way up to 20. Please note that the PV (spectral) sound engine will limit this to 3. It will display “PV LIMIT” if that happens.

Pitch bend range: pitch bend range in semitones. NOTE: MPE mode will fix this to 48!

Env pile-up: By default this on. The GR-MEGA reuses the same voice if the same MIDI note is played repeatedly, and just piles up the amp envelope. This mostly works fine, but in sampler mode you may want to turn it OFF.

LFOAMT25: Turn this ON to use improved/correct LFO amount modulation. The 1.0 patches use an incorrect way to do this which is noticeable when you use external mod sources like the mod wheel. These old patches have this toggle set to OFF. Since firmware 1.7, this is ON by default.

Transpose: how many semitones (and cents) the patch is transposed.

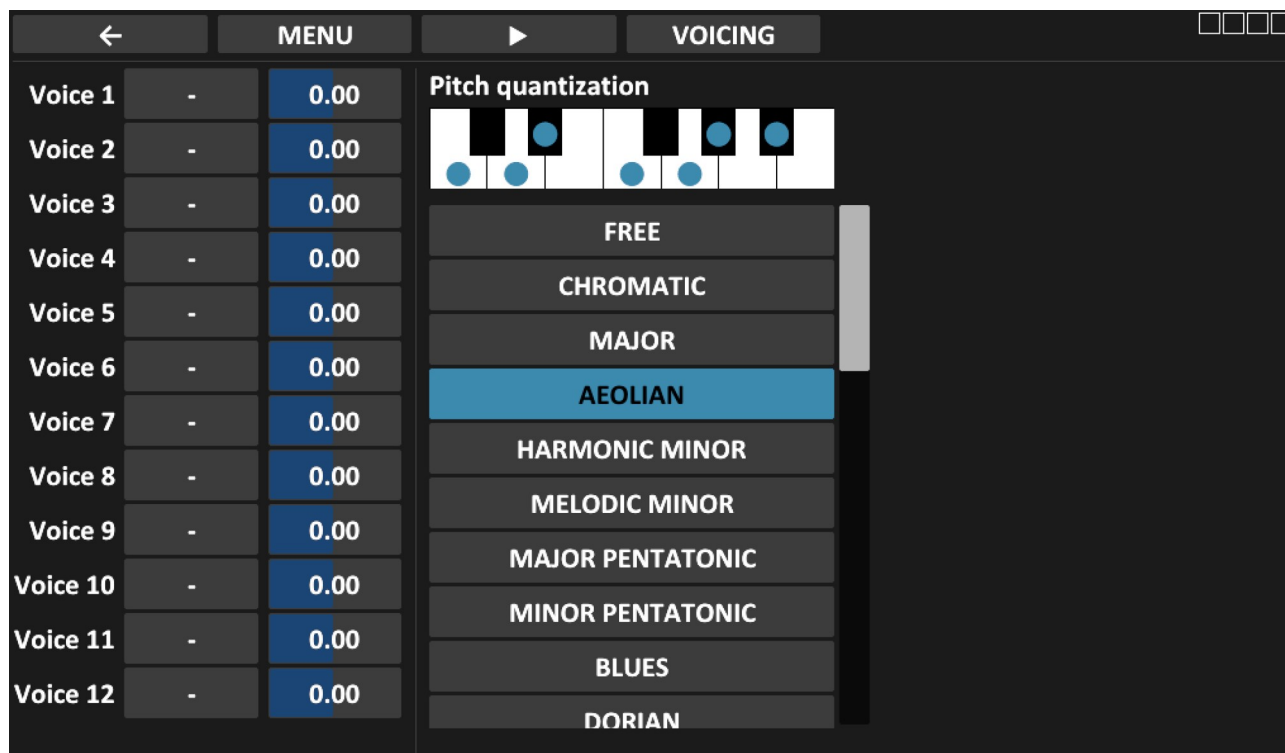
Glide: Can go from 0.0 ms up to 2000 ms. 0.0 means there is no audible glide.

Always (glide): Notes will always glide, even if notes do not overlap.

Velosens: This sets the amp envelope sensitivity to note on velocity. If this is 0, then it means all MIDI notes sound just as loud. If it is 100, then it means it's totally sensitive and very gently pressed midi note will have low volume, while a fast one, will have max volume.

Sub-osc balance: use this when you're using the sub-oscillator and playing polyphonically. Drag to the left to place more emphasis on the bass. Drag to the right to place more emphasis on higher pitch.

Patch menu (Voicing)



Shortcut to enter this menu: [Menu] + [Chord].

Left column – voicing:

This displays the 12 chord notes and their fine tuning. You can add the same note twice or more to increase the number of times it's played in the granular arpeggiator, or to increase the chance of getting played when the arpeggiator is set to random.

Turn completely to the left ("-") to disable the chord note.

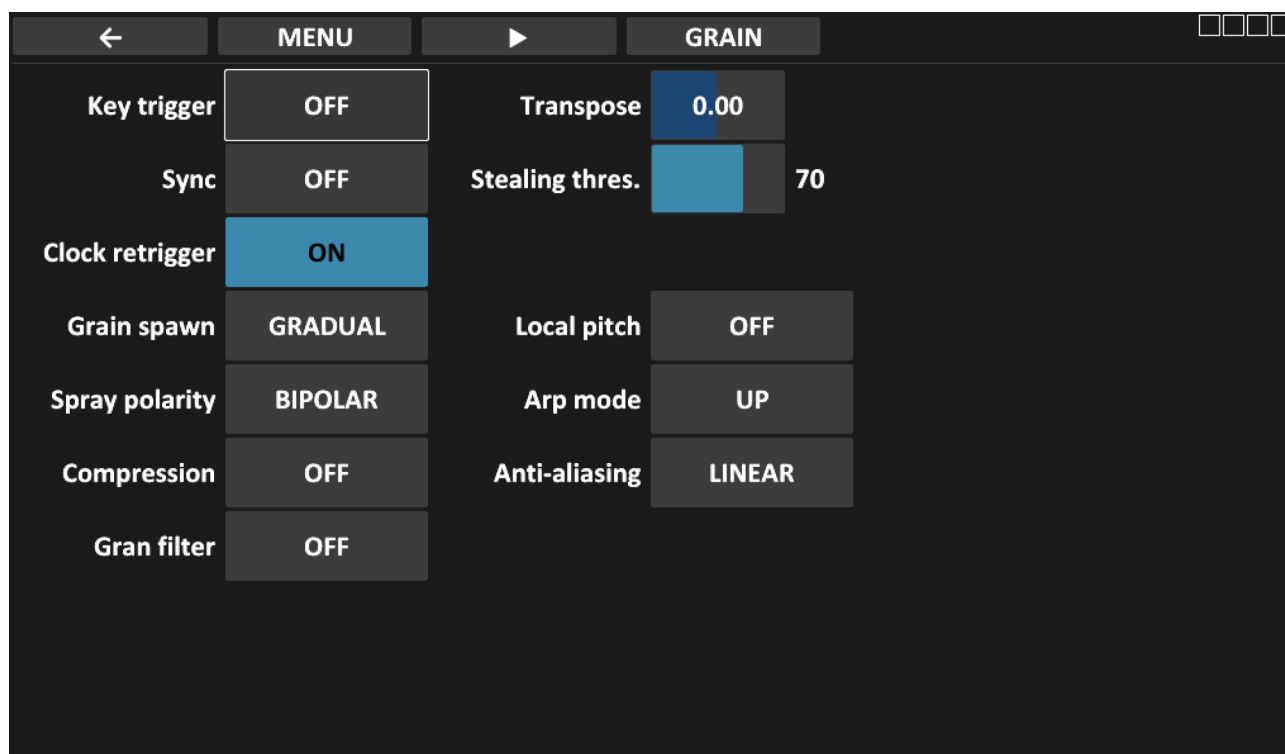
Note that the lowest note in the chord will match the playing note, and all the other chord notes are transposed up relatively.

In granular sound engines this will split the granular cloud, and distribute each chord note evenly among the grains, leaving total volume unaffected. In other sound engines chord mode will stack, meaning that it will add volume.

Right column - pitch quantization

Select a scale to use, and toggle notes on the keyboard to make your own user scale. At the bottom of the list you can find non-western scales (more than 12 keys per octave) like 24-TET, 31-TET, etc.

Patch menu (Grain)



Enter the Patch menu by Holding [Menu] and pressing [1], or any of the [Key Trig],[Sync] buttons on the bottom right of the GR-MEGA's physical panel.

Grain Key trigger: When this is on, a grain will trigger directly when a note is played. When this is off the grains sequencing is independent from note triggers.

Grain Sync: ON: let the grains spawn synchronized to the clock, and its clock division, OFF: use the knob setting.

Clock retrigger: ON: grains are synced across voices. OFF: each voice has its own clock phase.

Grain spawn: Set the mode in which the grains spawn:

This tells the granular engine how to spawn grains when a new note is triggered. There are four options:

1. Gradual: gradually generate grains based on the configured clock
2. Direct: Generate a full cloud as if the granular engine had been running continuously in the background.
3. Direct reset: This does the same as direct mode, but with all grains starting within the spray area. This will boost the bass and the volume of the voice.

4. Recycle: Re-use old grains. This can give silly effects.

Only applies to granular and granular slice sound engines. Technical note: spawn mode is a consequence of the energy / CPU saving properties of the engine. When a voice is not playing for a while, the granular scheduler is disabled.

Local pitch: Independent Pitch per grain ON/OFF

Normally the grains that are playing will play until the end of the set “grain size” at the same note pitch of the note that was played when the grain started playing. When the setting is “OFF” the grains will be tuned to the notes that are played at that very moment.

If you want the grains to follow the played pitch immediately turn this setting “OFF”. If you have longer grains and want to have a granular-chorus like function that glides between notes. Turn it “ON”.

This feature can also be used to create a swarm like sound where all grains have a different pitch. Just try to wiggle the “Pitch” knob, or use an LFO to modulate Pitch. Set the LFO speed high enough and you’ll get a swarm-like chorus effect. LFO amount can add additional dramatic effect.

This was called “granular glide” on the GR-1.

Grain stealing threshold: Grain stealing kicks in when the 128 grains per voice are used up. The GR-MEGA’s grain stealing is intelligent and results in no crackles or clicks whatsoever. Leave this at 0 to disable grain stealing. With a high combination of density and grain size the grain scheduler will start oscillating. When the slider is set higher than 0.0 it will gradually start stealing grains. The higher the setting, the more aggressively the stealing will be. This will result in shorter grains, but the grains spread will be quite homogeneous. And the way in which this occurs is quite intuitive and natural.

ARP mode: set the mode of the granular arpeggiator:

Up, down, down-up, up-down, random, shuffle, forward, backward, forward-backward, backward-forward.

Note that up and down sort the notes in the chord, while forward and backward do not!

Anti-aliasing: LINEAR or POLY PHASE.

Anti-aliasing is employed when converting pitched grains or voices to the native 48 kHz playback speed. This avoids undesired strange harmonics, that are not in the sample’s timbre.

The GR-MEGA always uses anti-aliasing, but in the granular and slice sound engines, this is LINEAR interpolation, which can still result in residual aliasing in some cases. For sampler and tape sound engines we offer POLY PHASE interpolation which further reduces aliasing.

At the time of writing, this algorithm is considered to CPU heavy to be effectively used in the granular sound engines.

Compression: grain count compression ON/OFF

Turn this ON to limit volume of large clouds. turn off if you want let a single cloud to punch through your mix. Warning: this can get loud. A single cloud may force the output into clipping territory!

Gran filter: granular filter mode

This toggles a special mode which transforms the GR-MEGA's LPF and HPF cutoff knobs into “spectral content selector” for granular mode. Granular sound engine only.

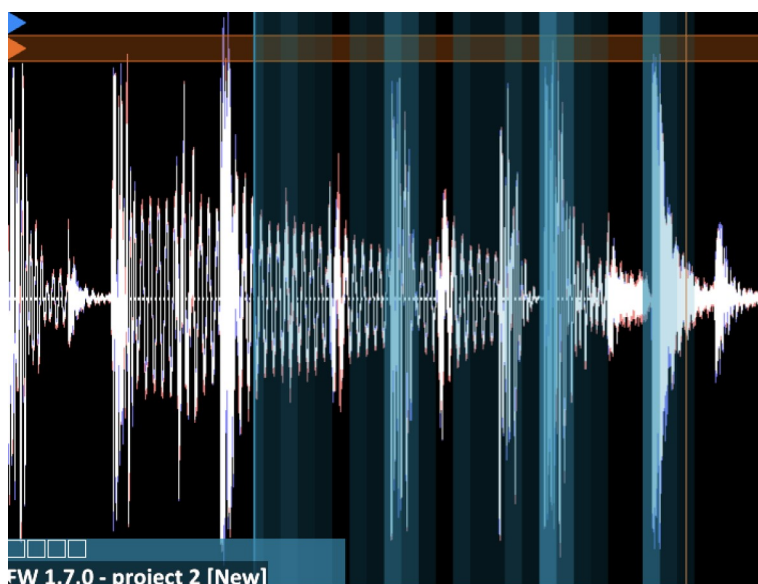
Toggle this ON, and you can then tweak your spectral selection window.

For instance:

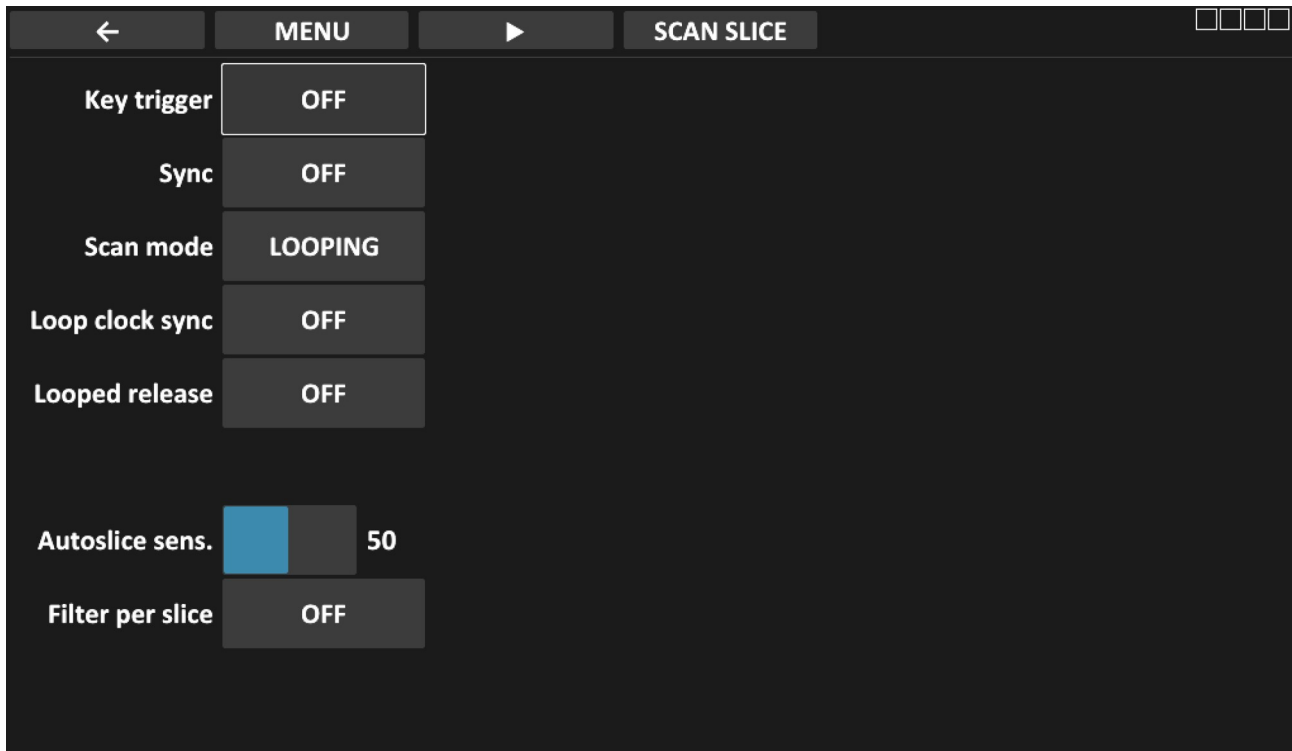
- * Turn (Spray) knob to 100%.
- * Set LFP cutoff = 400 Hz.
- * Set HPF cutoff = 0 Hz.

The engine will now only select all bass and sub-bass heavy parts in the sample. Bright areas in the spray rectangle will highlight this.

The screenshot below shows highlighted bits of sample (more blue, less transparent) that are areas more likely to spawn grain, because they match the spectral centroid as set up by the filters:



Patch menu (Scan / slice)



Key trigger: The scanning through the sample can be reset by a voice trigger/note-on event.

* When “OFF”, scan position is never reset and all voices will have the same scan position.

* When “ON”, the scan position will reset to the “Play position” on every voice trigger/note-on event.

* “LEGATO” will only reset the play position on the first note played.

* “POLY” will reset scanning only for the newly playing note, comparable to envelopes per voice in a traditional polysynth. This means that each voice can have its own scan position independent of the others. This can be used as a sort of “auto fugue”.

Sync:

On: scanning is synchronized to the clock, and its clock division

OFF: use the scan knob setting.

Scan mode:

The GR-MEGA scanning movement has four modes: **[One shot / Loop / Ping pong]**

The scan knob influences speed and direction of all these modes.

Loop clock sync: Synchronize looping to the beat.

ON: synchronize the scanning motion in the loop to the system clock. This will allow loops to be synced to the beat. OFF: free running.

Looped release: stay in the loop when releasing voice

ON: Eventually exit the loop when releasing the voice. In pingpong mode it will have bounced an even number of times before doing so.

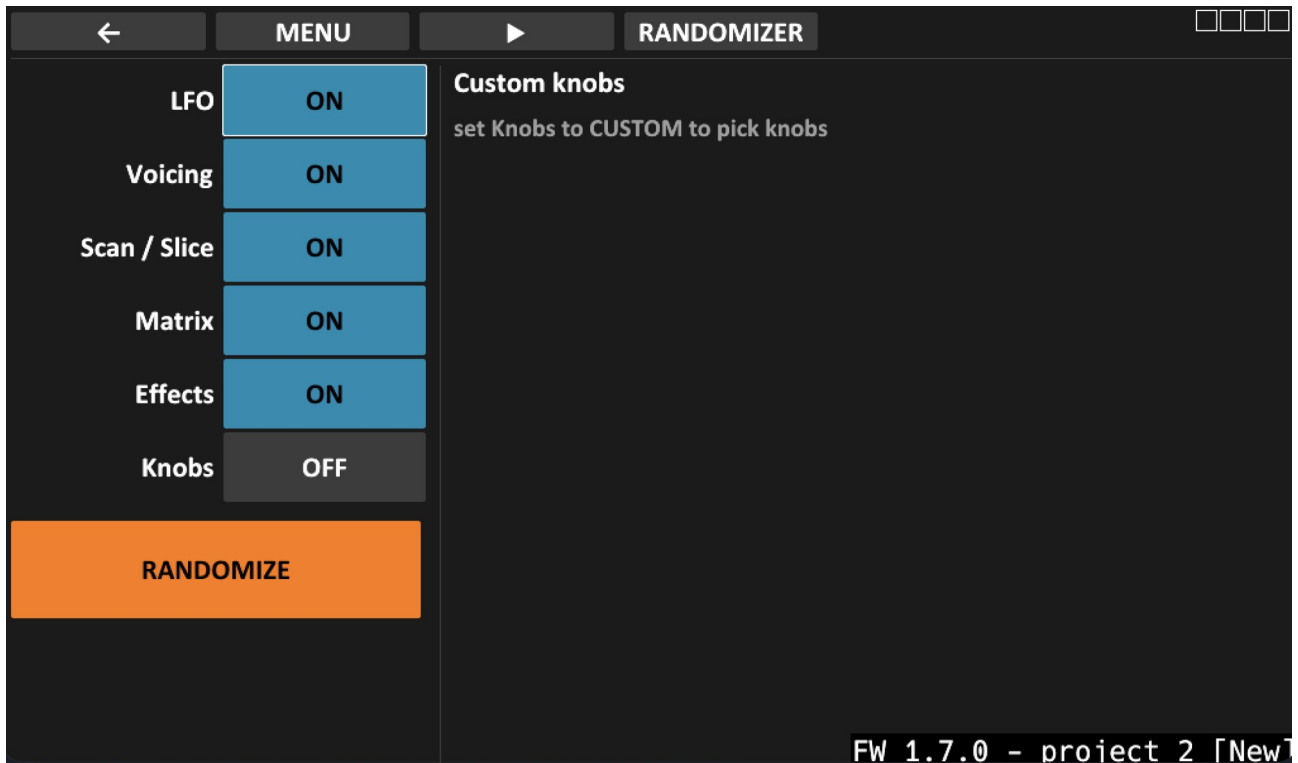
OFF: Stay in the loop when releasing the voice

Autoslice sens.: Autoslice sensitivity - How trigger-happy the autoslicer will get. At 0 it will probably miss a couple of onsets. At 100 it will probably waste all its slices before the end of the sample.

Filter per slice: Turn this ON to have independent filter cutoffs per slice. Of course this only affects slice mode. This applies to both the LPF and HPF, so each slice can have one pair of LPF and HPF. Default is OFF. When OFF, the filter settings affect all slices.

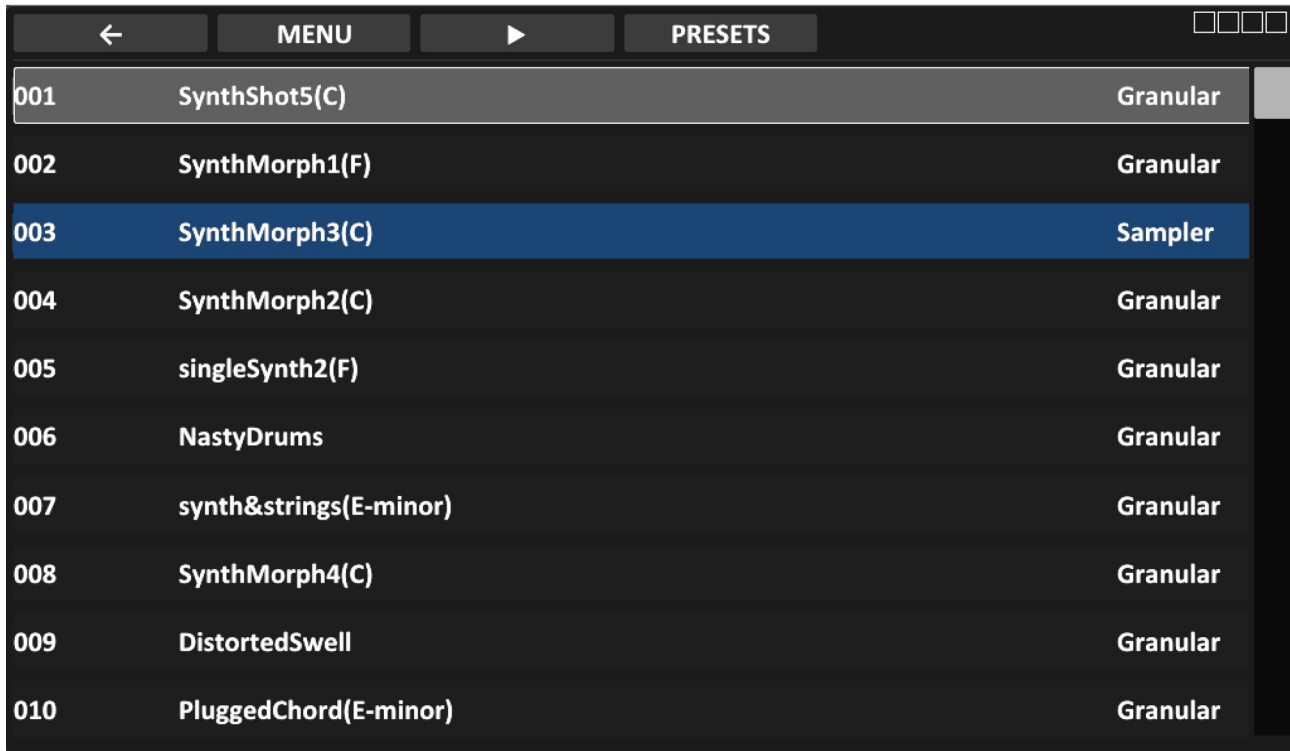
Patch randomizer menu

Toggle the buttons to enable or disable randomization of various parts of the current monotimbral preset. Up to 20 rows of the matrix will be randomized. We considered the full 100 to be overkill. Click the “Knobs” button to activate the per-knob randomizer. Then start turning knobs to fill the list. Hit the “Randomize” button to go.



Presets menu

Gives a quick overview of all 128 presets in the current project. Scroll using the arrow buttons. Press [Enter] to switch to the preset. You can copy and paste presets here to quickly reorganize them. Use [Copy] and [Shift] + [Copy] for this.



			□□□□		
←			MENU		
			▶		
			PRESETS		
001	SynthShot5(C)	Granular			
002	SynthMorph1(F)	Granular			
003	SynthMorph3(C)	Sampler			
004	SynthMorph2(C)	Granular			
005	singleSynth2(F)	Granular			
006	NastyDrums	Granular			
007	synth&strings(E-minor)	Granular			
008	SynthMorph4(C)	Granular			
009	DistortedSwell	Granular			
010	PluggedChord(E-minor)	Granular			

Templates menu

Works similar to the preset menu. Use the arrow buttons to scroll.

←

MENU

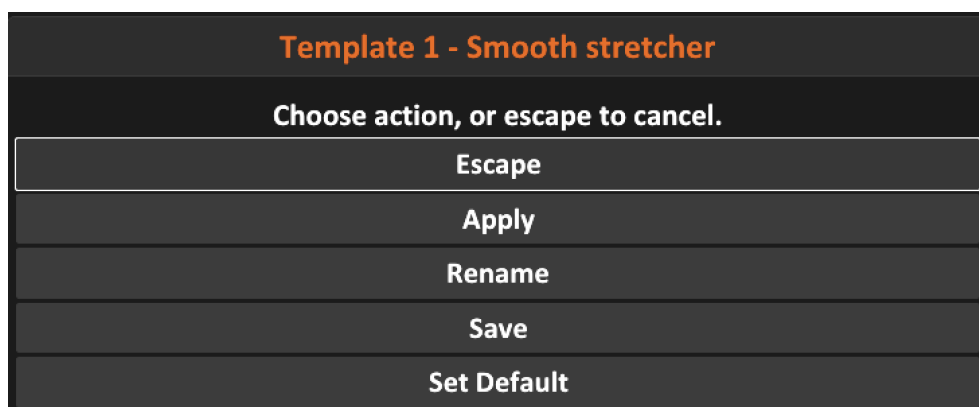
▶

TEMPLATES

□□□□

001	Smooth stretcher *default*	PhaseVoc
002	Granular looper	Granular
003	Pingpong sampler	Sampler
004		Granular
005		Granular
006		Granular
007		Granular
008		Granular
009		Granular
010		Granular

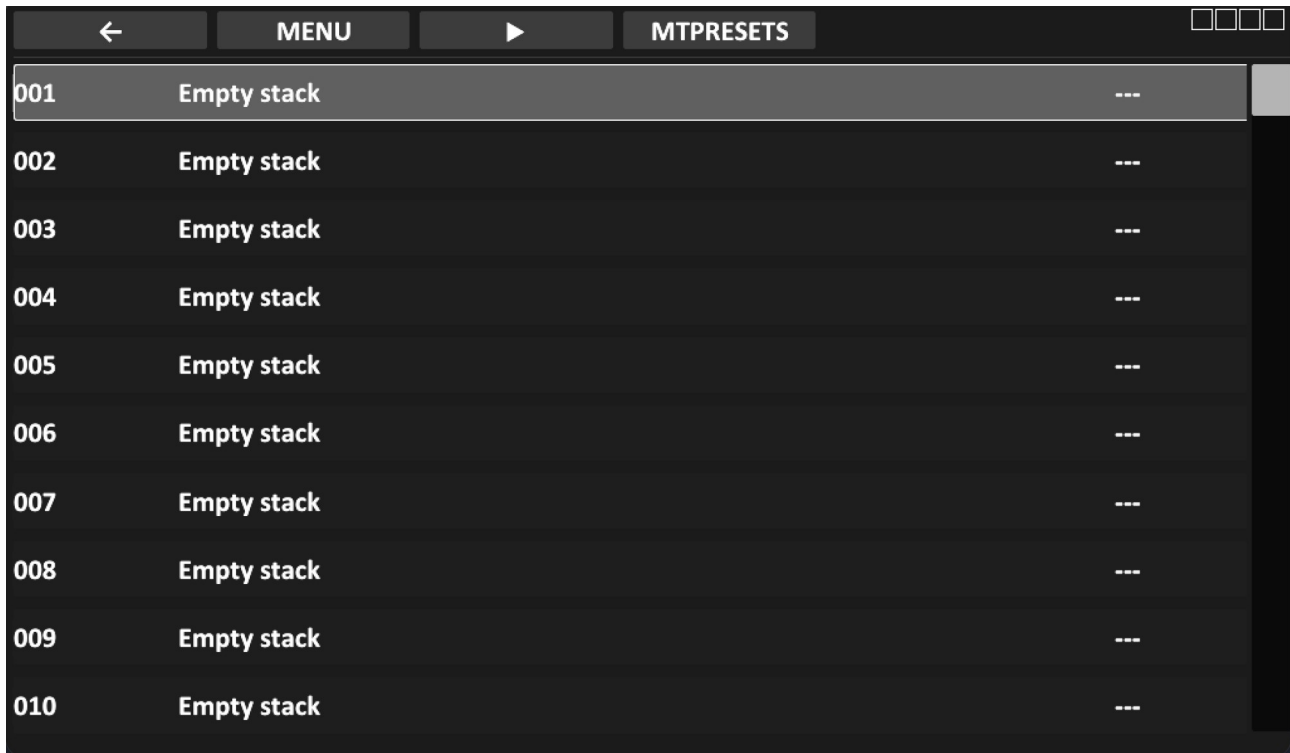
... and press [Enter] to get a menu. Set default is a key feature that allows you to set the *init patch*. The init patch is used when you do [Shift] + [Delete] in the main screen, and select “Patch”. You can also copy and paste, using [Copy], and [Shift] + [Copy].



Template 1 - Smooth stretcher
Choose action, or escape to cancel.
Escape
Apply
Rename
Save
Set Default

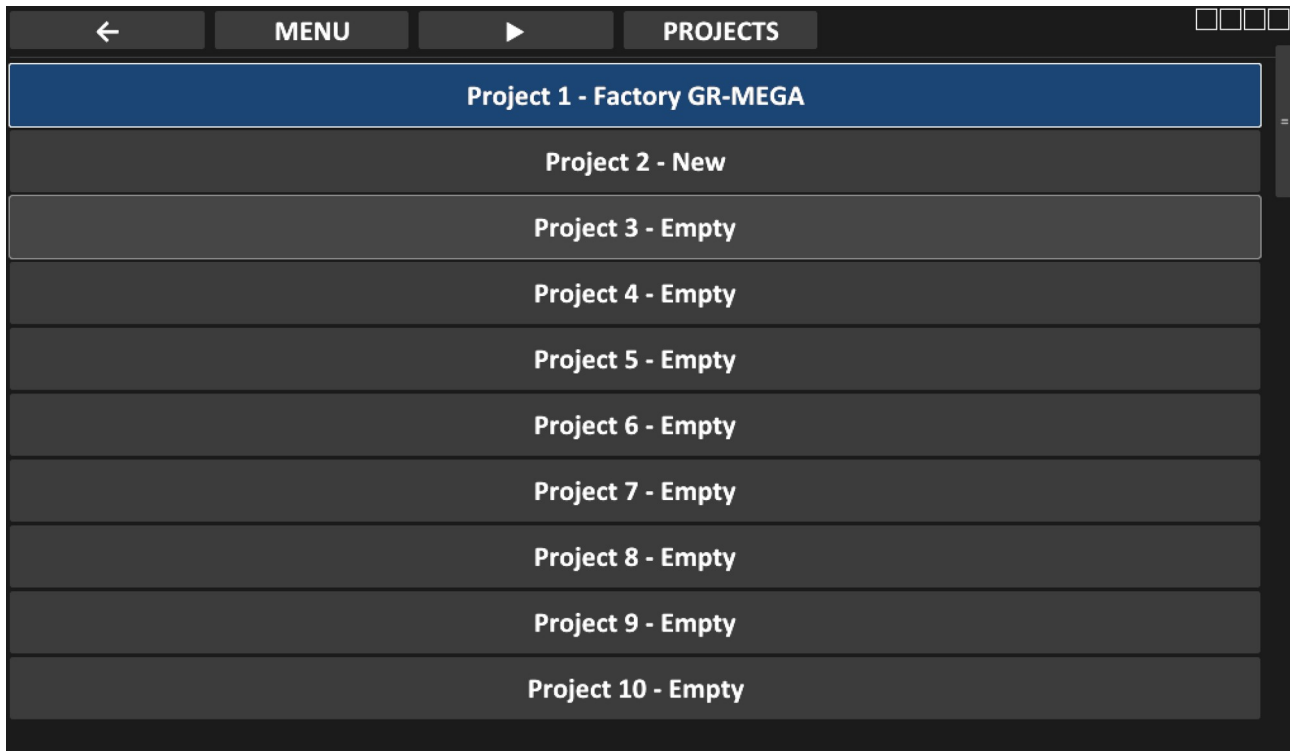
MTPresets menu

Multi timbral preset list menu. This works similar to the presets menu. Use the arrow buttons to navigate and scroll. Press [Enter] to get a menu to rename, save, or switch. [Copy] and [Shift] + [Copy] work as expected: copy and paste mtpresets to reorganize them.



	←	MENU	▶	MTPRESETS	□□□
001	Empty stack	---			
002	Empty stack	---			
003	Empty stack	---			
004	Empty stack	---			
005	Empty stack	---			
006	Empty stack	---			
007	Empty stack	---			
008	Empty stack	---			
009	Empty stack	---			
010	Empty stack	---			

Project menu



Enter the Project menu by Holding [Menu] and pressing [2].

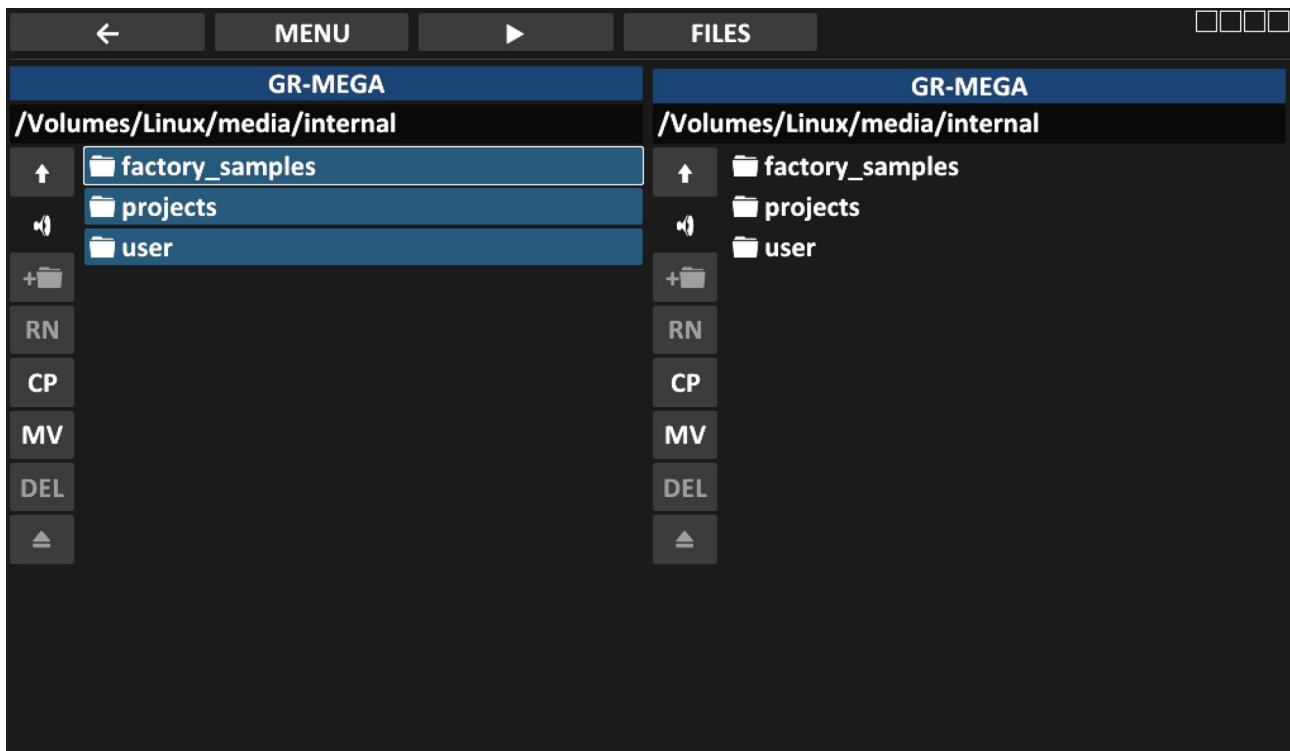
The project menu is simple. You can load, save, and rename projects here. Each row represents a slot in which a project can be stored, numbered 1 through 50. The slot that's **BLUE** is the actual active project. The one that's enclosed by white rectangle, aka “highlighted”, is the one you’re looking to do something with.

Use the GR-MEGA’s buttons to do the following:

- [↓][↑] Scroll through list, and highlight project.
- [Enter] Edit project. You are prompted a dialog with options: escape, rename, load from, or save to this slot.
- [Load] Load highlighted project. Loading an new project (a slot that was never saved to before) will let you start with an empty project.
- [Save] Save current project to highlighted project.
- [Delete] Initialize highlighted project.

Any potentially destructive action is protected. You will be prompted with a confirmation dialog when you load or save.

File manager



Enter the File manager by Holding [Menu] and pressing [3].

The file manager allows you to do everything you'd want to do with files:

- * Backup your projects to USB stick.
- * Import folders of samples to internal storage. For instance to the user sample storage: /media/internal/user/samples.
- * Reorganize your user samples. For instance, delete groups of samples. Rename and move others.

NOTE: the file manager is a powerful, but also dangerous tool. If you can do things by simply using the save and load buttons in the main screen, then that is easier and safer! If you're restoring projects from USB backup, it's also easier to use the Projects menu!

NOTE: File sharing over USB C or LAN cable can do about the same as the file manager, but file sharing can be harder to set up initially.

NOTE: Factory data and projects are write-protected. They cannot be modified in the file manager.

Features

Here's an overview of all the features of the file manager:

Navigation

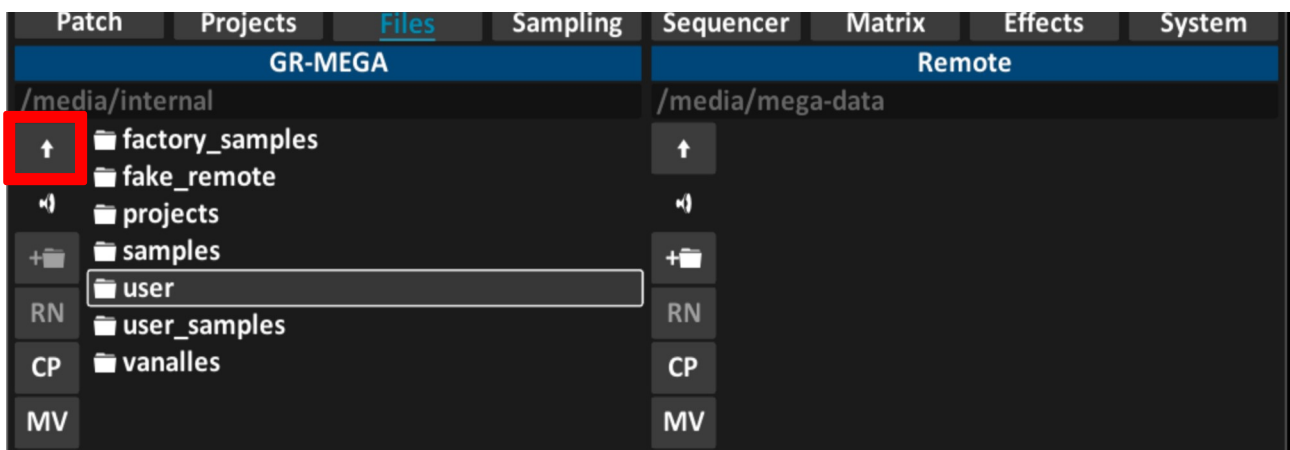
The file manager has two sides: left and right. You can edit files on both sides. You can copy and move files from left to right, and also from right to left. You can easily move the focus from the left side to the right side with the cursor keys [←] [→] [↑] [↓] and [Enter].

Traversing folders

Stand on a folder or drive and press [Enter] to enter said folder or drive.

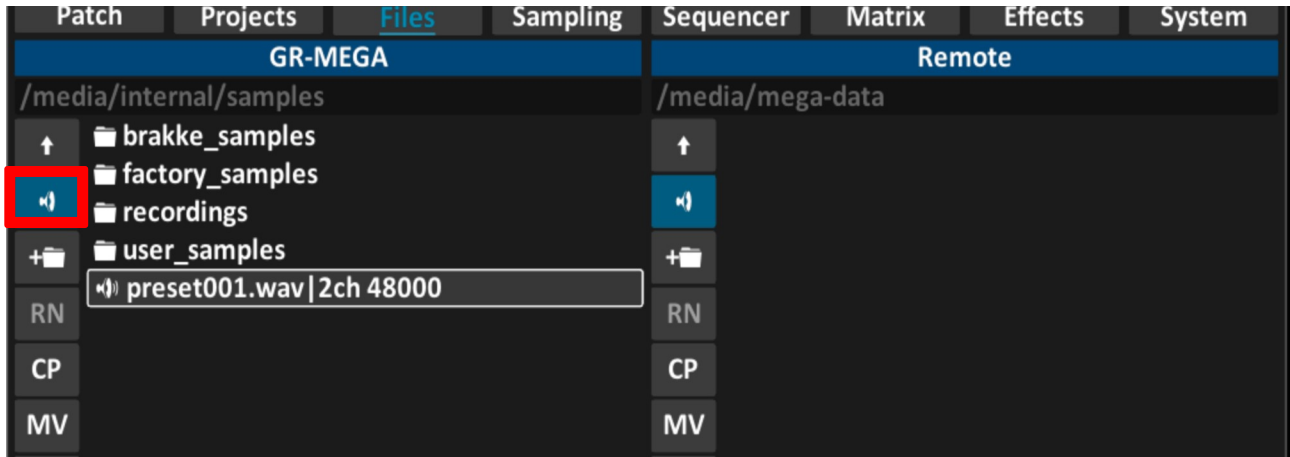
Up to parent folder

Stand on the UP ↑ arrow GUI button, and then press the [Enter] button to go up in the directory tree (to the parent folder). Shortcut using the physical buttons: [Shift] + [←].



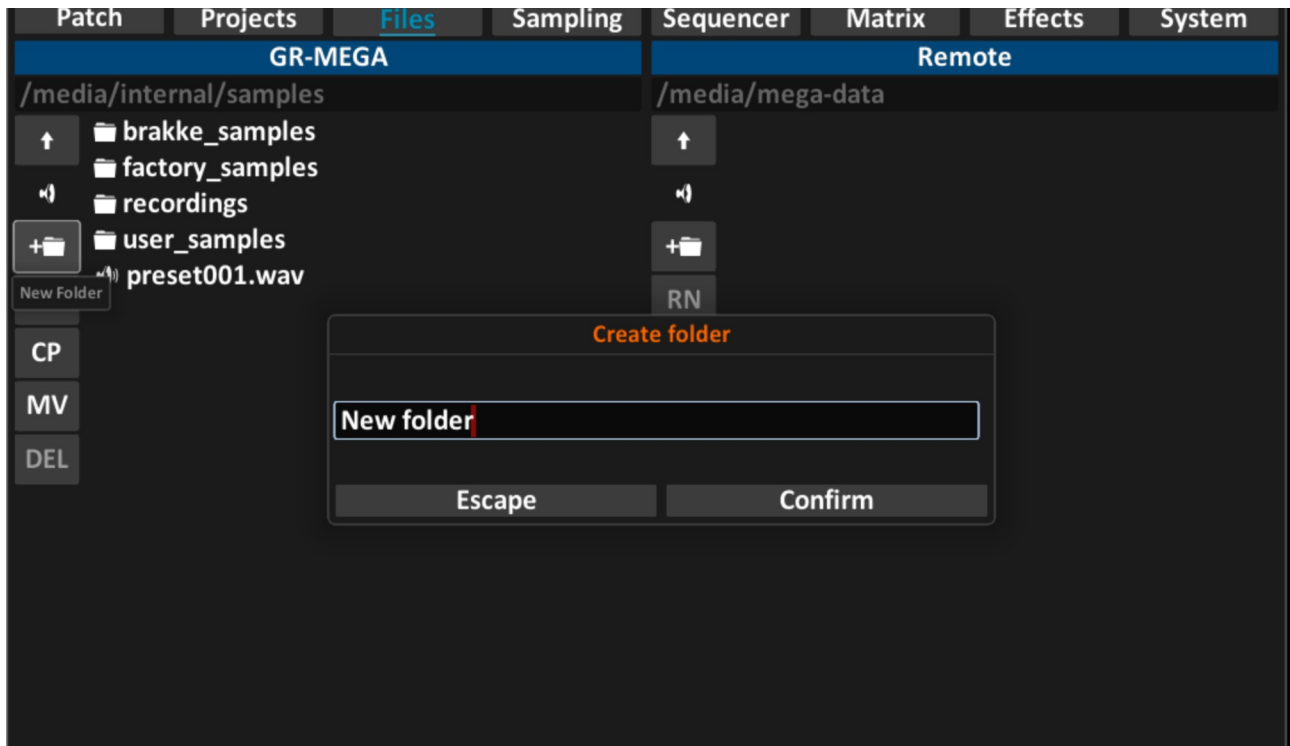
Sound previews

Stand on the speaker [🔊] icon end press [Enter] to enable sound previews / audition for sample files. Stand on a sample file, and it will start playing it and also show stats like sampling frequency and number of channels.



New folder

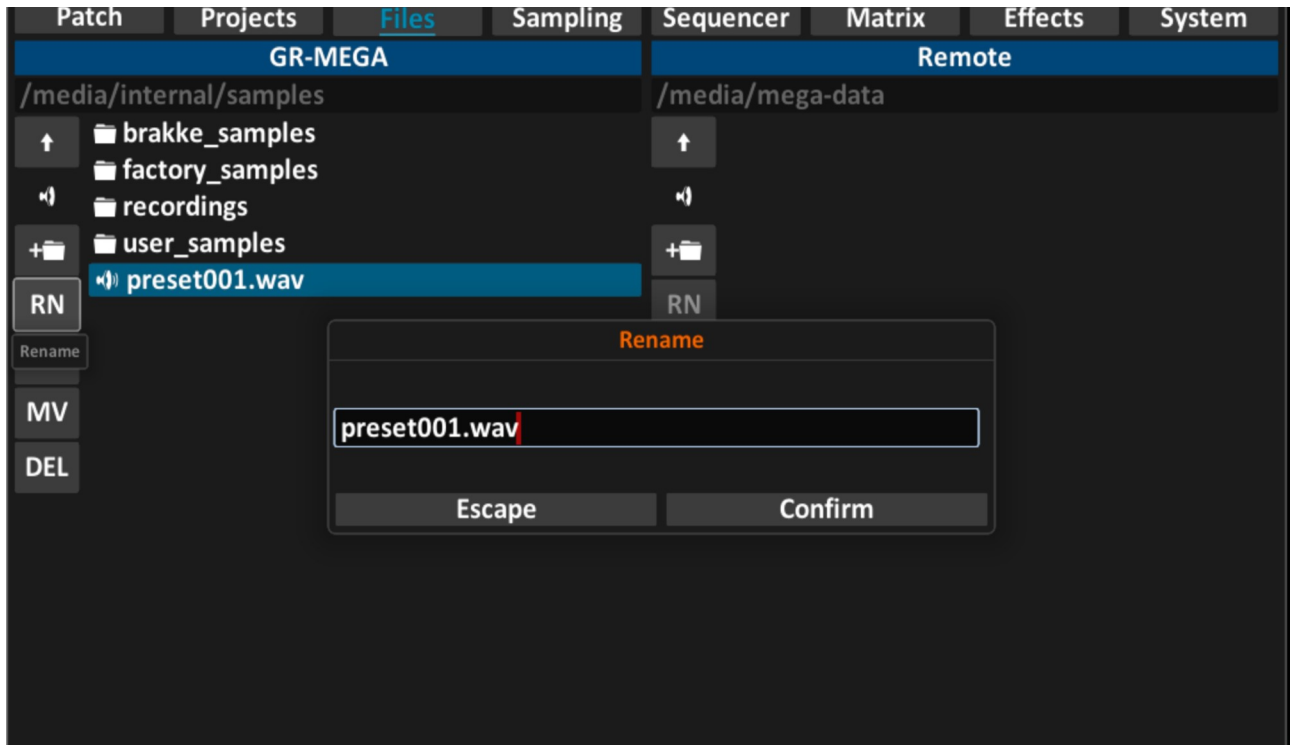
Standing on the [+📁] icon will let you create and name a new folder:



Rename

Stand on a file and press [Enter] to select it. It will be highlighted in BLUE.

Standing on the [RN] GUI button and pressing [Enter] will open the renaming popup.

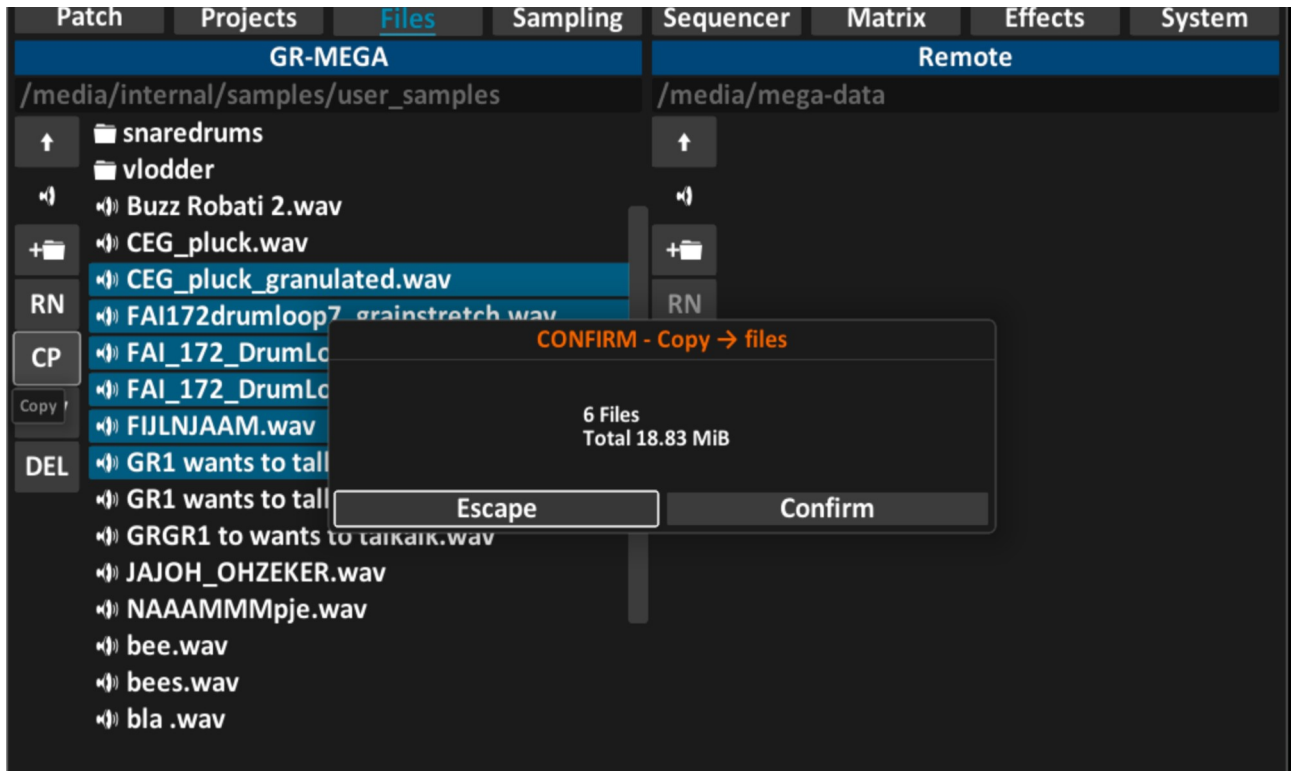


Copy

Stand on a single file and press [Enter] to select it. If you stand on a folder you have to hold [Shift] and press [Enter] to select it... a plain [Enter] without [Shift] will enter the folder!

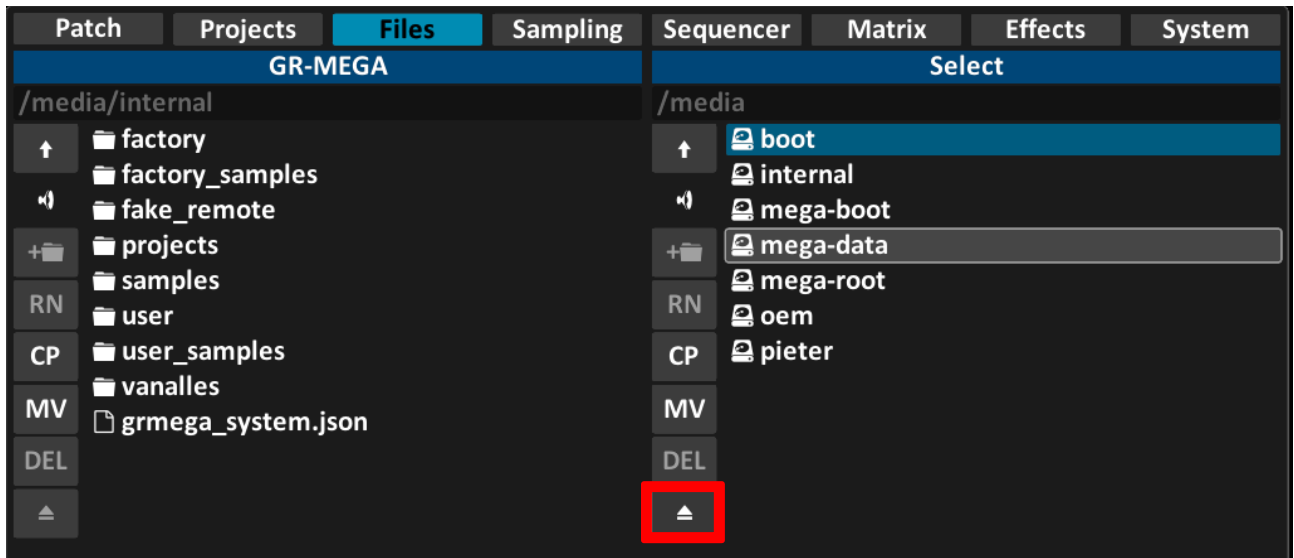
Hold down [Shift] and use the arrow buttons [↑] [↓] to drag-select multiple files and folders. They'll all be highlighted in BLUE.

Then press the [CP] GUI button to copy.



Eject drive [⏏]

Use the eject button to safely unmount a selected drive. Since firmware 1.3 the GR-MEGA is quite robust against pulling out USB sticks after copying, however, we added this button just in case. Operating systems will often complain that a stick is not cleanly ejected, so this feature will at least get rid of that message.



Move

Pressing the [MV] GUI button will do the same but will delete the originals after having copied them! This is a powerful feature to organize your files, but beware that's there's NO UNDO or recoverable trashcan like on your PC!

NOTE: Copy and move can transfer stuff from the left to the right, and also from right to left. However, they will refuse to transfer anything if there are files selected on both sides!

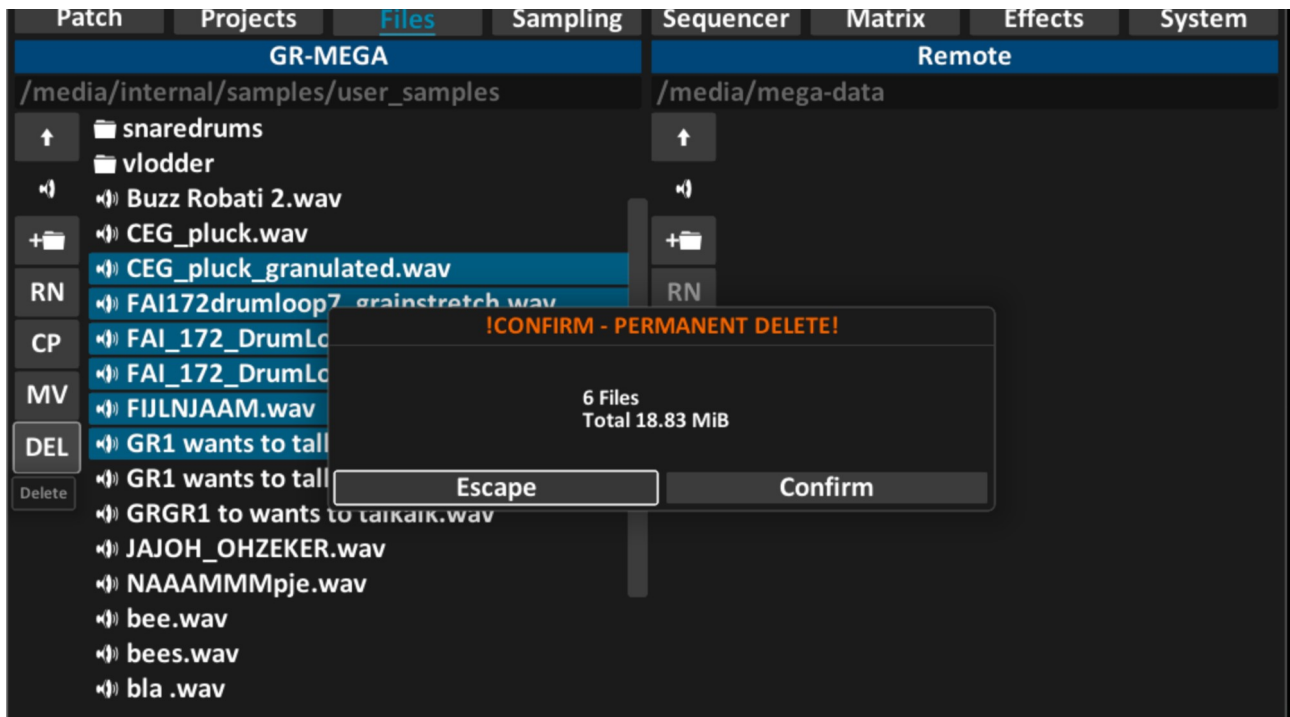
During transfer a progress bar will be displayed. You can abort the transfer with [Escape], although this is not recommended except in cases where you're mistakenly copying a vast amount of data.

Delete

Stand on a single file and press [Enter] to select it. If you stand on a folder you have to hold [Shift] and press [Enter] to select it... a plain [Enter] without [Shift] will enter the folder!

Hold down [Shift] and use the arrow buttons [↑] [↓] to drag-select multiple files and folders. They'll all be highlighted in BLUE.

Then press the [DEL] GUI button to copy.



NOTE: Deleting is final! There's no UNDO function. There's no recoverable trashcan like on PC! Be careful. Project and factory data are protected, but in the user folder you can delete anything you want.

Sampling menu

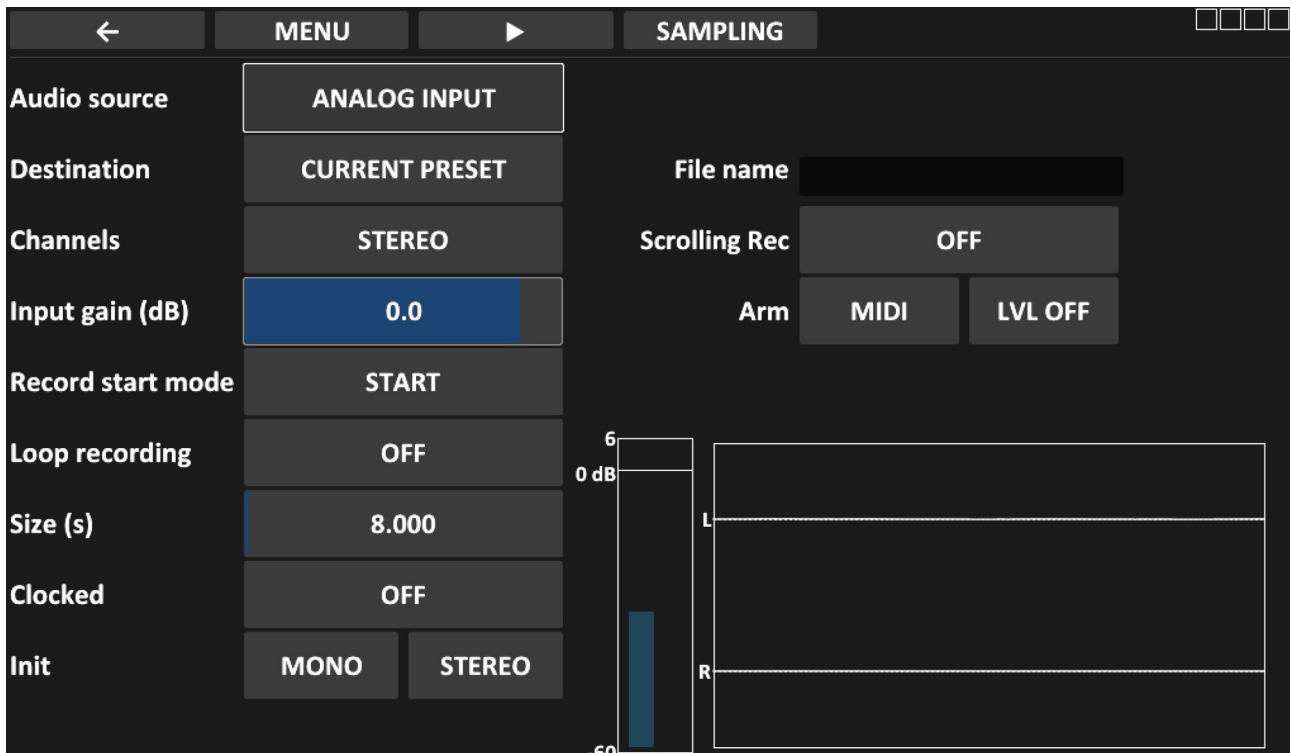
The sampling menu allows you to setup your audio source, the recording destination, sample length, channels, and various things related to looping. Enter the Sampling menu by Holding [Menu] and pressing [4], or [Record].

Audio source

* *ANALOG INPUT*: use the GR-MEGA high quality balanced analog inputs

* *RESAMPLING*: use the GR-MEGA engine output. It takes the signal after layer mix, before the (Wet) and (Master) knobs are applied.

* *USB C*: use the multitrack UAC2 audio from the USB C port. This allows you to record digital audio straight from your PC or Mac! Since firmware 1.3 this is reliable. At this moment just the first 2 tracks (the first stereo track) are used for recording. Only one layer may be recording at the same time.



* *USB A*: The idea here is that you can use your own USB class compliant interface. If it is recognized, the name should appear to the right. This is reliable since firmware 1.5. It may take up to 10 seconds for the stream to become synchronized after switching to this input source!

Some additional notes apply:

Many audio interfaces, especially the more exclusive ones, require special drivers, and we cannot implement them all.

While a lot of class compliant USB audio interfaces will work out of the box, a lot of them still require additional driver data for channel selection and volume control.

More importantly, since USB C enables you to already hook up your PC or Mac, that means that this feature is much less useful.

Destination

* *CURRENT PRESET*: record into the buffer of the current preset. Recommended if you're using an external source (NOT resampling).

* *WAV FILE*: use this to record to WAV file in the background. In the "File name" text field you can enter a prefix for your WAV file name.

When resampling, it will save to: `/media/internal/user/resampling/prefixNNNN.wav`

When recording, it will save to: `/media/internal/user/recording/prefixNNNN.wav`
(Where NNNN means a serial number like 0001, 0002, 0003, etc.)

Channels

Duplicate left (LL) or right channel (RR). Useful when recording from mono sources, such as guitar pedals.

Input gain

Attenuate or boost input signal up to 12 dB.

Arm

Use the Arm MIDI button to trigger on MIDI Beat start. The level slider can be to to OFF in which cases it doesn't care about the audio input level. Slide it to the right to set a trigger level in dB (-80..0).

Record start mode

You can turn on the ability to record here and select the start point for recording. The following start points are available:

- Current position: When pausing the recording, recording will start from that same point when activated again
- Wiper: Recording starts from the sample position, when activated
- Start: Recording starts from 0.0s, when activated

When turned to Off, the [Record] button will refuse to record. You can use this to protect your preset against accidental button presses.

Loop recording

With "loop recording" turned off, the recording of the sample will be a one shot recording. Turn "loop recording" on to do continuous recording/real-time processing.

Scrolling rec

Turn this ON so you can easily keep the play head at the right distance from the rec head. [Shift] + [Record] forces scrolling rec. Scrolling record supersedes "Play follows rec" from firmware <=1.6. If you push the horizontal fader all the way to the right, it does the same as "Play follows rec", but you can easily add latency by moving it a bit more to the left. This way you can also use forward playing grains, and even grains with higher pitch, which may cross the record head.

Recommended is also to use Patch menu → Grain → Spray polarity and set that to "NegUnipolar", or more quickly use [Shift] + (Spray). Note that you can use [Shift] + (Op encoder) to zoom in and out, just like normally. Max zoomed in is 1 second, and max zoomed out is 10 seconds.

TODO: screenshots of synced and unsynced heads

Clocked record

Toggle this ON to record in bars instead of seconds. Recording stops only after a bar (4 quarter notes) is completed.

Sample size

The sample size or “recording duration” (in seconds, or bars) can be set here. Max is 5m49s, as this is the maximum the granular engine can efficiently handle. You need to explicitly press “Init mono” or “Init stereo” for this change to take effect!

Note that when setting time in bars, this is based on current internal BPM. Should this change, you will also need to change the buffer size.

Turn this completely to the left to set “AUTO” (default). This will make sure that when you start recording the buffer automatically grows. To have a buffer that is fixed to a specific size, turn it more to the right. Auto mode will initialize the buffer when you press [Record].

Clocked

Turn this ON (default) to count time in bars. Turn this OFF to count time in seconds.

Init mono

Press [Enter] on this button to create a new mono sample with the number of seconds set with “Sample size”. If you did this accidentally, press this preset’s button to undo all unsaved changes to sample and/or patch.

Init stereo

Press [Enter] on this button to create a new stereo sample with the number of seconds set with “Sample size”. If you did this accidentally, press this preset’s button to undo all unsaved changes to sample and/or patch.

Step sequencer

Position	1	2	3	4	5	6	7	8	
Note / Slice 1	C-4	-	-	-	G-3	-	-	-	ENABLE
Note / Slice 2	-	-	-	-	-	-	-	-	BPM
Note / Slice 3	-	-	-	-	-	-	-	-	GLOBAL
Note / Slice 4	-	-	-	-	-	-	-	-	PAGE
Note / Slice 5	-	-	-	-	-	-	-	-	NOTES
Note / Slice 6	-	-	-	-	-	-	-	-	
Note / Slice 7	-	-	-	-	-	-	-	-	1-8
Velocity	100	100	100	100	100	100	100	100	9-16
Note Length	1/4 + 1/12	1/16	1/16	1/16	1/8	1/16	1/16	1/16	17-24
Chance	100%	100%	100%	100%	70%	100%	100%	100%	25-32
Mod 1	100%	100%	100%	100%	100%	100%	100%	100%	33-40
Mod 2	100%	100%	100%	100%	100%	100%	100%	100%	41-48
Mod 3	100%	100%	100%	100%	100%	100%	100%	100%	49-56
Mod 4	100%	100%	100%	100%	100%	100%	100%	100%	57-64

FW 1.7.0-a0 - project 1 [New]

120.00 BPM

1/16

POS 1

LENGTH 8

FWD 1

The GR-MEGA's step sequencer is present as a menu tab, but also accessible via the front panel. Enter the Sequencer menu by holding [Menu] and pressing [5], or [Seq]. When playing a sequence or when inside the sequencer menu, the preset buttons double as sequence position.

The GR-MEGA's sequencer can be used for chords, but in slice mode it can also be used to trigger slices: like a drum sequencer. In the phase vocoder sound engine, you can use it like chord mode is used. This can increase polyphony in this engine by a lot. You can use 3 chords of 7 fingers at the same time!

There can be 64 steps as maximum (8 bars of 8 steps), and each step can contain up to 7 chord or slice notes. Each step has a note length, velocity, chance, and 4 modulation settings (for use in the mod matrix). A note is disabled showing only a dash '-'. When you use the horizontal slider or (Op enc) you can change a disabled note to an enabled note of a certain key or slice.

You can also use the sequencer to send notes to attached MIDI devices.

System → MIDI → Send Seq notes → ON.

Note that the sequencer will always trigger the GR-MEGA synth engines. You can set layer volume to zero if you do not like this, and only want to control your attached MIDI synth.

The sequencer will then transmit notes on the MIDI channel assigned to the layer you are using. Use System → MIDI → Layer <N> MIDI channel to change.

MIDI Transport commands will be sent to attached MIDI devices if you start and stop the sequencer.

You can toggle MIDI clock transmission with System → Send clock.

Navigate using the arrow buttons [←] [→] [↑] [↓] to find a cell to edit, and then use the horizontal fader for coarse data entry and (Op enc) for fine tuning. Hold [Shift] along with the horizontal fader or (Op enc) to set all values in the current row. Hold [Shift] and press [Execute] (next to the operation encoder) to randomize the entire row.

Tip: using [→] and the horizontal fader repeatedly, you can enter a sequence of notes or modulations really quickly.

Note that navigating will highlight the step / column to edit in **ORANGE**. The playing column / step is highlighted in **BLUE**. Play position **BLUE** has priority over edit position and will hide **ORANGE** if they are on the same step.

You can also use the [Copy] button to copy a column to clipboard and [Shift] + [Copy] to paste it to another column. The [Delete] button initializes a cell, and [Shift] + [Delete] gives you a dialog to select what to initialize: the column, the row, all notes, all modulation, etc.

The sequencer is polyphonic. Even a horizontal track is polyphonic. Meaning notes can overlap. When the patch is set to a polyphony of 1 (i.e. monophonic), notes can no longer overlap and will replace each other.. which is useful when glide is enabled.

Global vs free BPM. In the rightmost column, there's a button underneath "**BPM**": GLOBAL/FREE. Setting this to FREE means you'll have free-running BPM for this layer's sequencer. This is quite an exotic feature, but it can probably be used to good effect by a creative mind.

Sequencer mod lanes

The sequencer offers 4 modulation lanes. These can be used as SEQ MOD 1..4 in the matrix. Modulation in each step can be changed as you like. There's also modulation slewing [0..1000ms] for the mod lanes: [Shift] + (Sequencer Rate). Slewing gives a laggy interpolation, very similar to what glide can do for the notes.

The mod lanes can be used without any sequencer notes. You can see them as alternative LFO's that allow for long and complex waveforms. Mod lanes can also be used in parallel with parameter locks. Read on.

Parameter locks

Sequencer parameter locks, or p-locks, are toggled in the right column under "**PAGE**". You can toggle this from "NOTES" (or mod lanes) to "P-locks". This will reveal a new page with a total of 16 lanes. Each lane can be assigned to a parameter. Simply turn or move a knob or fader to assign. A locked value can be present and is then denoted as 0..100%, or can be absent, and is then denoted by a dash "-", just like with the notes.

Turning a physical knob or a moving a fader will result in assignment of a parameter (one of the 140 modulation destinations) to a p-lock lane. You can then use the regular controls like the position fader and (Op enc) to enter lock values.

P-locks can be overridden by live tweaks. Just exit the sequencer menu, start the sequencer, and start tweaking. When a p-lock is triggered it will override the knob value, but if you're in an "empty" step, where no p-lock is present, you can just tweak the knob, and when you release it, it will be held until the next p-lock.

Parameter locks can be used in parallel with will all the data on the primary page, including the mod lanes.

NOTE: the (horizontal) position fader of course is primarily used as a means for data entry in this menu. Combine it with the [Shift] button to assign a parameter lock to position.

Patch	Projects	Files	Sampling	Sequencer	Matrix	Effects	System	Macro
Position	1	2	3	4	5	6	7	8
LPF CUTOFF	50%	-	-	-	-	-	-	ENABLE
POS	0%	20%	-	-	40%	-	-	BPM
NONE	-	-	-	-	-	-	-	GLOBAL
NONE	-	-	-	-	-	-	-	PAGE
NONE	-	-	-	-	-	-	-	P-LOCKS
NONE	-	-	-	-	-	-	-	
NONE	-	-	-	-	-	-	-	1-8
NONE	-	-	-	-	-	-	-	9-16
NONE	-	-	-	-	-	-	-	17-24
NONE	-	-	-	-	-	-	-	25-32
NONE	-	-	-	-	-	-	-	33-40
NONE	-	-	-	-	-	-	-	41-48
NONE	-	-	-	-	-	-	-	49-56
NONE	-	-	-	-	-	-	-	57-64
NONE	-	-	-	-	-	-	-	
NONE	-	-	-	-	-	-	-	

120.00 BPM

1/16

POS 1

FW 1.7.0-a0 - project 1 [New]

LENGTH 8

FWD 1

Sequencer ties

Sequencer ties give you access to exotic note lengths like $\frac{1}{4} + \frac{1}{12}$, but also allow the sequencer to play legato and use glide on each row of notes. To tie two steps together, just hold press two neighbouring preset buttons, for instance preset [1] and preset [2]. To extend the tie to 3 steps, you can then press preset [2] and [3]. This is denoted with "+" signs between the note lengths, and a brown background color. Press the preset buttons again to remove the ties.

Note Length $\frac{1}{4} + \frac{1}{12}$

Modulation Matrix

The GR-MEGA's modulation matrix consists, at the time of writing, of 24 sources by 140 destinations. There's 4 LFO's, CV, MIDI and MPE, and 4 sequencer modulators as sources. The destinations are numerous and listed in table 2.

Enable	Source	Curve	Amount	Polarity	Category	Destination	
ON	LFO 1		+0.000	69.05 %	BI +	ENGINE	PITCH
ON	LFO 2		+0.000	100.00 %	UNI +	LFO	LFO1 RATE
ON	LFO 3		+0.000	17.20 %	BI +	ENGINE	PAN
ON	LFO 2		+0.000	100.00 %	UNI +	LFO	LFO3 RATE
OFF	LFO 4		+0.000	0.00 %	BI +	ENGINE	POS
ON	NONE		+0.000	0.00 %	UNI +	ENGINE	POS
ON	NONE		+0.000	0.00 %	UNI +	ENGINE	POS
ON	NONE		+0.000	0.00 %	UNI +	ENGINE	POS
ON	NONE		+0.000	0.00 %	UNI +	ENGINE	POS
ON	NONE		+0.000	0.00 %	UNI +	ENGINE	POS

Enter the Matrix menu by Holding [Menu] and pressing [6], or [LFO Select].

While the matrix is large, it's quite easy to set up. If you want to set an LFO to modulate a parameter, you can do it completely using the front panel. You don't have to be in the matrix menu:

Hold down the [LFO Select] button in the LFO section, and then turn a knob.. for instance (LPF Cutoff). You've now assigned the currently highlighted LFO to LPF Cutoff! Keeping holding and turning to automatically assign the amount in 1 go. Or, if you wish, just turn (LFO Amount). Press the [Wave] button to select the appropriate wave. Hold [Shift] + press [Wave] to toggle modulation polarity.

It doesn't need to stop there, because LFO sync options are also represented as physical buttons. There's even LFO phase and phase quantization [Shift] + (LFO Phase).

In the matrix menu, you can just navigate with the arrow buttons [←] [→] [↑] [↓] to a new row in the matrix (up to 50 are supported), and start editing the Source cell. Use the horizontal slider and (Op Enc).

Tip:

A shortcut to quickly assign a destination: hold down [Shift], and turn a knob, or move a fader. This will assign the control to the current modulation in the mod matrix.

If you need to access different modulation sources besides LFO's, this can also be done on the front panel, but in the current firmware it's easier to do this in the menu.

Still, if you want to do this you can use:

1. Hold down [Shift] + turn (Destination) encoder to set the source.
2. Then turn (Destination) encoder to set your destination.
3. Turn the (Amount) knob to set the amount for this modulation.
4. Possibly use [Shift] + [Wave] to set polarity.

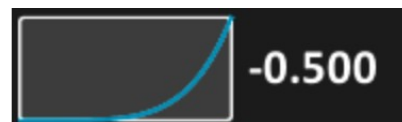
Curve

With the Curve column you can smoothly bias the modulation to either extreme of the range.

Amount and polarity do speak for themselves, but [Shift] + (Op enc) maybe nice for fine tuning amount.

Destination is best set with the horizontal slider and then possibly fine tuned with (Op enc).

Using the amount curve you can smoothly and subtly (or not so subtly) bias the modulation to one side of the other. For instance:



Mod sources

* LFO1,2,3,4: the LFO's. Note that each layer has it's own LFO's.

* CV1, CV2: the two control voltages. These are of course global for the entire system. Range is -5V..+5V, so if you have a 0..5V source it will mean that in Unipolar modulation it will use the upper part of the range!

* SEQ MOD 1,2,3,4: Use the sequencer mod lane as a mod source. Each layer has its own sequencer, so each layer also has its own 4 mod lanes.

* MOD WHEEL: the mod wheel on your MIDI controller.

* KEY TRACK: key position of your MIDI controller. Note that the sequencer also sends this mod source.

- * VELOCITY: MIDI note on velocity. MPE calls this “Strike”
- * PITCH: MIDI pitch wheel. Also used by MPE controllers when sliding fingers between and over keys, called “Slide”.
- * AFTER: MIDI channel aftertouch. Also used by MPE. Since every key in MPE has its own channel: channel aftertouch becomes usable as polyphonic aftertouch.
- * TIMBRE: MPE only. CC74.
- * LIFT: MIDI note off velocity.
- * AUX ENV: the auxiliary envelope, accessible from the front panel of the GR-MEGA.
- * RANDOM1,2,3,4: sources that change to a new random value at each new note. Note that each layer has it's own random sources.
- * POS X: the horizontal fader. Using this to modulate the destination POS can lead to interesting effects.
- * IN ENV: audio input follower. Its AR envelope may be configured as follows: [Shift] + [ADSR Curve], followed by using the A and R sliders.

Effects menu

The GR-MEGA has 4 simultaneous effects (FX slots) per layer. You can choose effects from a list of 7 effects (at the time of writing). Each effect can only be used once per layer.

Enter the Effect menu by Holding [Menu] and pressing [7]. The menu displays the effects chain for the layer that is currently in focus (see and use the Layer buttons 1,2,3,4).

←		MENU		▶		EFFECTS		□□□□	
Sends		Effect 1		Effect 2		Effect 3		Effect 4	
Audio in		REDUCER →		DELAY →		LARGE REVERB →		COMPRESSOR →	
0.00%		FX preset -		FX preset -		FX preset -		FX preset -	
Synth		FX1 ASSIGN	BIT	FX1 ASSIGN	TIME	FX1 ASSIGN	PRE	FX1 ASSIGN	NONE
100.00%		FX2 ASSIGN	RATE	FX2 ASSIGN	FEEDBACK	FX2 ASSIGN	ROOM SIZE	FX2 ASSIGN	NONE
		DRY	100.00%	DRY	100.00%	DRY	100.00%	DRY	100.00%
Presets		WET	0.00%	WET	0.00%	WET	0.00%	WET	0.00%
1 Chain		BIT	0.00 %	TIME	1 ms	PRE	50.00 %	THRESHOLD	6.00 dB
1		RATE	0.00 %	FEEDBACK	50.00 %	TIME	32.00 s	KNEE	0.00 dB
2 Chain				ADJ MD	Pitch	ROOM SIZE	300.00	RATIO	1:1.000
2				SYNC MODE	Free	SPREAD	100.00 %	GAIN DB	0.00 dB
3 Chain						EARLY	50.00 %	ATTACK	499 ms
3						TAIL	50.00 %	RELEASE	499 ms
4 Chain						LP CUTOFF	8000 Hz	LOOKAHEAD	0 ms
4						HP CUTOFF	200 Hz	IN[-60..0dB]	
5 (ro)						LOSHelf CT	300 Hz	GR[0..30dB]	
6 (ro)						LOSHelf DB	0.00 dB	OUT[-60..0dB]	
7 (ro)						HISHelf CT	4000 Hz		
						HISHelf DB	0.00 dB		

Sends column

This is the left-most column.

You can route audio input into the effect chain [-100..+24dB].

You can route synth output into the effect chain [-100..+24dB].

The +24dB loudness may be necessary if you play with low polyphony, and low grain count. Most effects are *linear* and don't care, but effects like compressor, distortion, and saturator, definitely benefit from high input levels.

Selecting Effects

Patch	Projects	Files	Sampling	Sequencer	Matrix	Effects	System
Effect 1		Effect 2		Effect 3		Effect 4	
LARGE REVERB →		NONE →		NONE →		COMPRESSOR →	
FX1 ASSIGN	LPF CUTOFF	FX1 ASSIGN	NONE	FX1 ASSIGN	NONE	FX1 ASSIGN	NONE
FX2 ASSIGN	ROOM SIZE	FX2 ASSIGN	NONE	FX2 ASSIGN	NONE	FX2 ASSIGN	NONE
DRY	100.00 %	DRY	100.00 %	DRY	100.00 %	DRY	0.00 %
WET	11.38 %	WET	0.00 %	WET	0.00 %	WET	100.00 %
LPF CUTOFF	1279 Hz					THRESHOLD	0.00 dB
HPF CUTOFF	10 Hz					KNEE	0.00 dB
PRE	0.00 %					RATIO	100.00 %
TIME	0.26 s					GAIN DB	6.51 dB
ROOM SIZE	299.88					ATTACK	9 ms
SPREAD	100.00 %					RELEASE	100 ms
EARLY	100.00 %					LOOKAHEAD	0 ms
TAIL	100.00 %						
LOSHelf CUT	10 Hz						
LOSHelf DB	0.00 dB						
HISHelf CUT	10 Hz						
HISHelf DB	0.00 dB						

At the top there's a row displaying headers Effect 1, Effect 2, Effect 3, Effect 4. Navigate to the row just underneath to cycle through the effects:

Then standing on a GUI button with an effect name on it (highlighted here in **RED**), Turn (Open) or move the horizontal slider to cycle through the effects. This GUI button is called the *FX Type button*.

To quickly swap effects in the chain:

1. Focus on the FX type button you want to swap
2. Press [Copy]
3. Focus on the FX type button you want to swap with
4. Hold [Shift] + [Copy] to swap.

If you have a USB mouse attached or a HDMI + USB touch screen hooked up: Just drag and drop the FX Type button.

Note that the **LIGHT BLUE** denotes the effect that is accessible by (FX1) and (FX2) knobs on the front panel! You can change which effect is accessible by (FX1) and (FX2) by turning the (FX Select) encoder.

Effect types

At the time of writing the GR-MEGA has the following effects:

CHORUS

COMPRESSOR: fully featured compressor, that also has VU meters since version 1.2.

DELAY: regular delay (independent stereo channels)

DIST(ortion) inverse cubic type of distortion

FLANGER

PPDELAY: ping pong delay

REVERB: a simple reverb that is easy on the CPU

LARGE REVERB: huge and organic reverb (including a 6 parameter EQ)

REDUCER: sample rate and resolution reducer

RESONATOR: multi band resonator that can do scales, and mimic physical modelling

RING MOD

SATURATOR tanh() type distortion

VIBRATO

Why 2 reverbs? The normal reverb is less impressive sounding with less parameters, but is easy on the CPU. The large reverb is very smooth sounding, yet can also be used to achieve metallic effects with small room sizes.

← MENU →		▶ EFFECTS			
Sends	Effect 1	Effect 2	Effect 3	Effect 4	
Audio in	REDUCER →	DELAY →	LARGE REVERB →	COMPRESSOR →	
0.00%	FX preset -	FX preset -	FX preset -	FX preset -	
Synth	FX1 ASSIGN	BIT	FX1 ASSIGN	TIME	FX1 ASSIGN
100.00%	FX2 ASSIGN	RATE	FX2 ASSIGN	FEEDBACK	FX2 ASSIGN
	DRY	100.00%	DRY	100.00%	DRY
	WET	0.00%	WET	0.00%	WET
	BIT	0.00 %	TIME	1 ms	PRE
	RATE	0.00 %	FEEDBACK	50.00 %	TIME
			ADJ MD	Pitch	ROOM SIZE
			SYNC MODE	Free	SPREAD
					EARLY
					TAIL
					LP CUTOFF
					HP CUTOFF
					LOSHELF CT
					LOSHELF DB
					HISHELF CT
					HISHELF DB
					THRESHOLD
					KNEE
					RATIO
					GAIN DB
					ATTACK
					RELEASE
					LOOKAHEAD
					IN[-60..0dB]
					GR[0..30dB]
					OUT[-60..0dB]

FX chain preset

Highlighted in **YELLOW**, this list can be stepped through with the arrow keys and clicked on. It can also be scrolled by navigating downwards, or by using USB mouse or USB+HDMI touchscreen. Click on (or press [Enter]/[Execute]) an FX chain preset to set the entire chain of 4 effects. Press save on a slot with index of at least 9 to name and save a user chain.

User FX chain presets will be stored to:

/media/internal/user/fx/grmega_fxchain_<index>.json.

(Single) FX preset

Highlighted here in **PURPLE**. Turn (Op encoder) to change factory preset for this FX. Turn past factory preset 8 to get to the user presets. Press [Save] to name and save a user preset. Presets are saved to: /media/internal/user/fx/grmega_fx_<fxname>_<index>.json

FX 1 and 2 Assign

Highlighted here in **RED** are the FX1,2 assign GUI buttons. Use the horizontal slider or (Op enc) to use assign one of the FX parameters from the list directly below in the same column.

Dry/Wet

Highlighted here in **ORANGE** are FX Dry and Wet. These can be changed with the horizontal slider and (Op enc), but also with the physical (Wet/Dry) knob on the front panel.

FX Parameters

Patch	Projects	Files	Sampling	Sequencer	Matrix	Effects	System
Effect 1		Effect 2		Effect 3		Effect 4	
LARGE REVERB →		NONE →		NONE →		COMPRESSOR →	
FX1 ASSIGN	LPF CUTOFF	FX1 ASSIGN	NONE	FX1 ASSIGN	NONE	FX1 ASSIGN	NONE
FX2 ASSIGN	ROOM SIZE	FX2 ASSIGN	NONE	FX2 ASSIGN	NONE	FX2 ASSIGN	NONE
DRY	100.00 %	DRY	100.00 %	DRY	100.00 %	DRY	0.00 %
WET	11.38 %	WET	0.00 %	WET	0.00 %	WET	100.00 %
LPF CUTOFF	1279 Hz					THRESHOLD	0.00 dB
HPF CUTOFF	10 Hz					KNEE	0.00 dB
PRE	0.00 %					RATIO	100.00 %
TIME	0.26 s					GAIN DB	6.51 dB
ROOM SIZE	299.88					ATTACK	9 ms
SPREAD	100.00 %					RELEASE	100 ms
EARLY	100.00 %					LOOKAHEAD	0 ms
TAIL	100.00 %						
LOSHelf CUT	10 Hz						
LOSHelf DB	0.00 dB						
HISHelf CUT	10 Hz						
HISHelf DB	0.00 dB						

Highlighted here in **RED** are FX parameters. Use the horizontal slider to quickly change the value, and use (Op enc) to step the value, for instance by 1% for each encoder tick. Hold [Shift] and turn (Op enc) to change 0.1% for each encoder tick. Some effect parameters like frequencies, times,

and amplitudes have a cubic curve on them. Meaning the slider will have more precision in the lower range.

Almost all FX parameters are available in the modulation matrix.

Note: if the effect has a large parameter list, then you can just navigate downwards and the list will scroll. Using a connected USB mouse or USB+HDMI touchscreen you can just drag it by the parameter names and scroll that way.

Large reverb

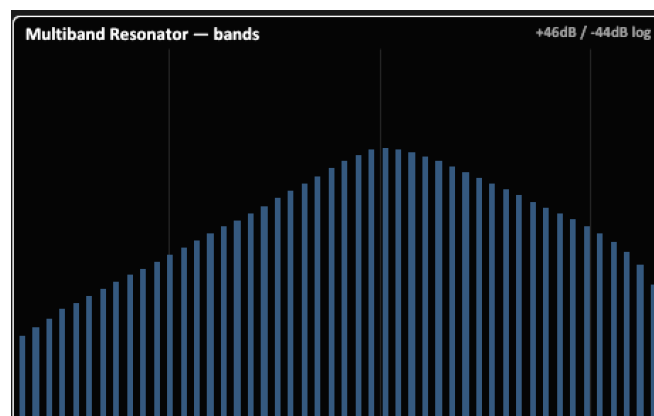
This is an effect with a multitude of parameters. It can sound very smooth, yet also very metallic if you like.

Pre: Pre-delay
Time: Time between early reflections and tail
Room size: Size of the room. Tiny bathroom to stadium..
Spread: Stereo width
Early: Early reflections volume
Tail: Tail volume

Cutoff, and shelf settings from a 3 band equalizer for the effect.

Resonator

Multi-band resonator. It can act as a traditional filter, but can be better seen like a resonator with a filter on top. It has a lot of parameters, some of which may not be instantly intuitive. The display is here to help. Many of the parameters will be instantly visible:



Tone: Filter control. Like a tone control on an old amp. To the left it's a lowpass, in the center a bandpass, on the right a high pass.

Cutoff: Cutoff frequency for the filter.

Resonance: Filter resonance.

Detune: Draw bands closer together or further apart. Can also fold back at 20 kHz.

Pitch: Offsets the pitch of all bands.

Tilt: Concentrate bands in the low end or in the high end.

Decay: Decay time. The higher the more resonant / tonal it will get. Low decay time will sound a lot like the input.

Bands: Number of bands [6-48]

Scale: Select a scale from the voicing menu. Also supported are inharmonic scales like metal rods. Turns of tilt.

Mode: Mono or true stereo. Mono can be “stereofied” with some tricks. Stereo mode is more CPU intensive.

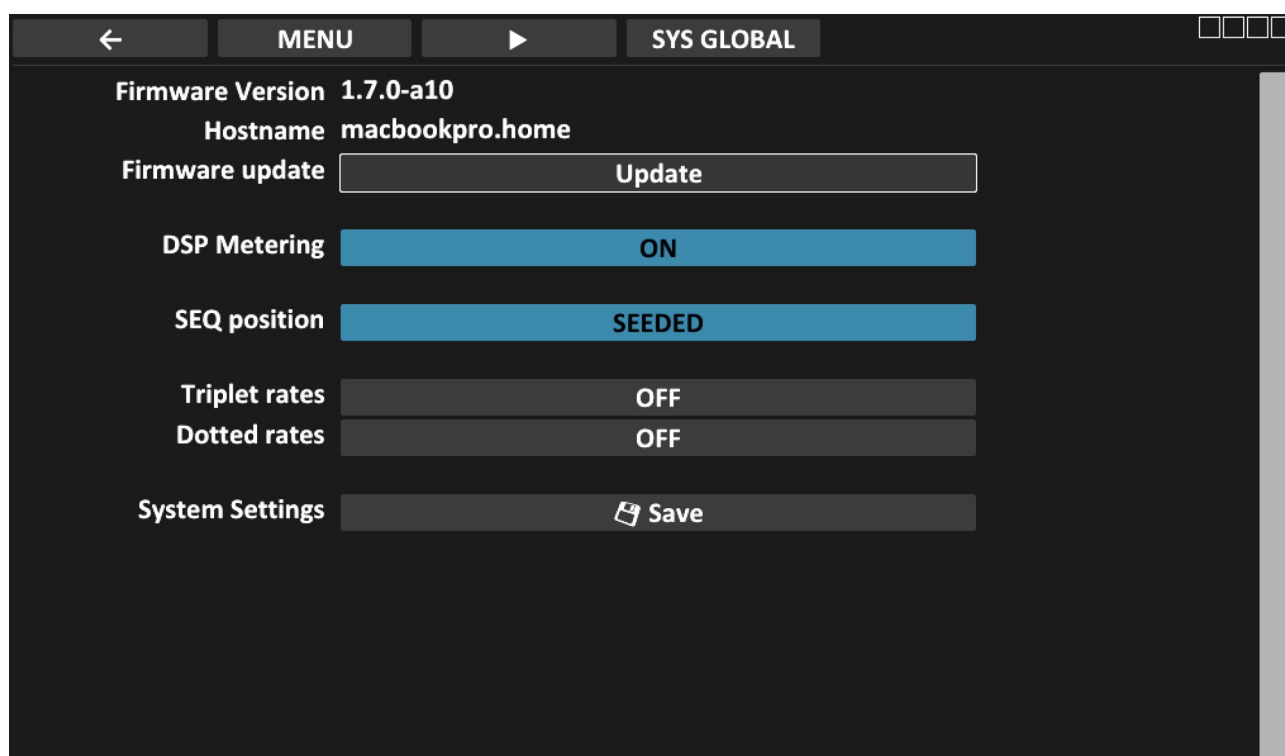
Width: Stereo width, in mono mode this will alternate the bands left and right in increasing amounts. In stereo mode this will just act as a regular mid-side control.

Noise: Randomize band gains [0..100%]. Can be used to achieve a form of shimmering.

N.rate: Speed at which noise updates. 0 = full stop

System menu

Enter the System menu by Holding [Menu] and pressing [8]. This menu contains settings that are global to the GR-MEGA: settings for how the front panel controls and display should behave, settings for your studio's MIDI setup, and settings concerning loading, saving to/from disk, CPU usage, metronome and tuning volumes.



Firmware update

One button click firmware search and update. See the section Firmware Updates for details.

DSP Metering

Turn ON to display a vertical bar that measures CPU usage in the right corner of the screen. Useful when you're pushing the system.

ORANGE: FX
PURPLE: USB audio processing
GREY: Housekeeping
BLUE: Voice rendering

SEQ position

How is the sequencer position calculated:

* SEEDED: means the position is derived 100% from a master counter. Change play mode, and back again, and it will return to the position as if you never changed the mode.

* INCREMENTAL: position is incremented. This means changing play mode from forward to reverse works much like turning around and walking the other way. Position remains: continuous.

Straight rates

Toggling this adds or removes straight rates 4/1 2/1 1/1 ½ ¼ 1/8 etc.

Triplet rates

Toggling this adds or removes triplet rates to/from the global list of available rates.

Dotted rates

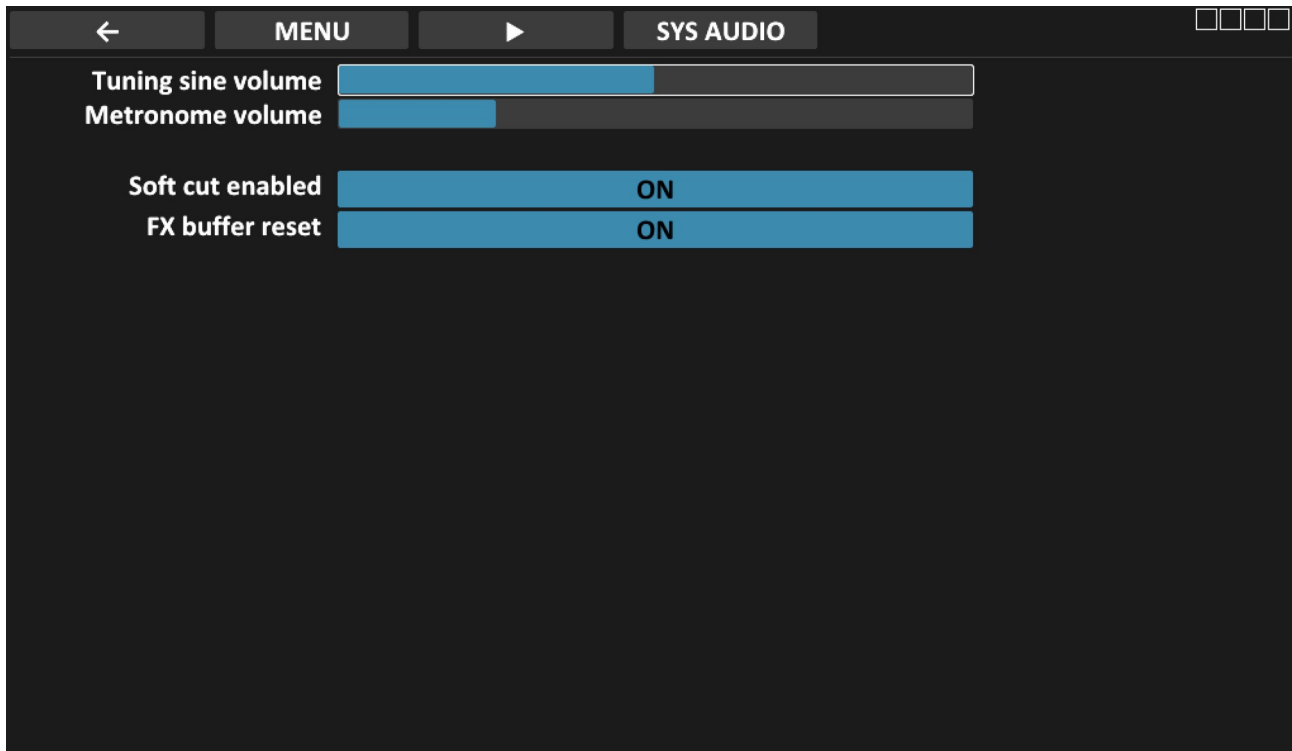
Toggling this adds or removes dotted rates to/from the global list of available rates.

Save system settings

Does what it says. Reports back almost immediately with a popup saying “saved”. You can also press the physical [Save] button in this screen.

Audio prefs

System wide audio preferences.



Tuning sine volume

Controls the volume of the tuning sine.

Metronome sine volume

Controls the volume of the metronome.

Env follower input

Audio input, layer 1, 2, 3, or 4.

Soft cut enabled

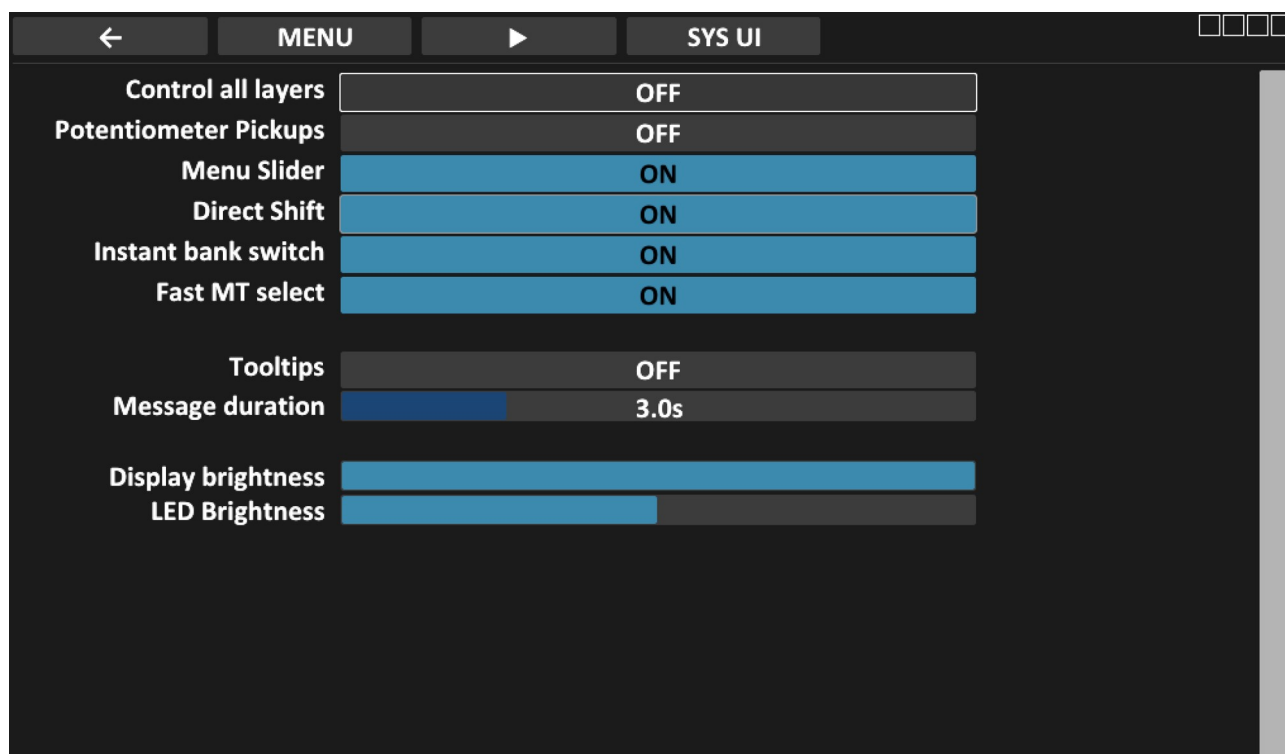
When cropping a sample, turn this ON to generate cross-faded, clickless results. Eats up a small overlapping piece of sample. Turn OFF if you don't want cross-fading.

FX buffer reset

ON: let FX linger on when switching presets.

OFF: silence FX between switching presets. This is the way that most hardware synths worked in the past.

System UI



Control all layers

Toggle this ON to control all active layers at the same time. OFF by default. This means knob tweaks only affect the layer in focus.

Potentiometer pickups

Turn this on to lock pots between preset or layer switches. An alternative to the [Feel] button, and also useful when your MEGA is older and potentiometers may have become dusty without servicing. Pickups are usually preferred for live settings, while [Feel] is preferred for studio settings.

Menu Slider

Use the horizontal slider to change the GUI. Turn OFF to keep using the horizontal slider musically while inside the menus.

Direct Shift

When ON, you have to hold down the [Shift] button to access the shift functions of each control. When OFF you can just toggle [Shift] by pressing it. Freeing up one hand. The disadvantage is that you also need to toggle the [Shift] button quite often, depending on what controls you are using.

Instant bank switch

Turn ON so presets switch directly also when you press Bank and Subbank buttons. Turning this OFF will wait for you to press the Preset button to finish the Bank, Subbank, Preset button combo.

Fast MT select

Fast multi timbral preset selection. This makes the Bank and SubBank buttons act like a direct preset. So in total you will have access to only 16 multi-timbral presets, but you will be able to access them with a single button combo.

Since 128 multi-timbral presets per projects (and choosing them from 128 mono timbral presets) may be overkill or may not have much use to the majority of users, we may opt to drop support for 128 multitimbral presets in favor of only 16 which can be recalled quickly.

Tooltips

Turn ON to enable tool tips (help bubbles) when standing on most menu buttons. Nice if you want to get started without the manual at hand. You can also leave this OFF, and press the [Feel] button to force tool tip help.

Message duration

Sets the OSD message and popup duration in seconds. Please note that some popups are exempt and have their own durations. An example is the copy/paste popups in the matrix menu.

External display (newer models only)

Toggle this ON to switch to your external HDMI monitor. This menu toggle is available only on models sold from October 2025 onwards. The older models do also support external monitors, but if you want to switch between internal and external, you need to power cycle and attach or detach the HDMI monitor.

Since firmware 1.7 both displays can be mirrored. Only available on newer models.

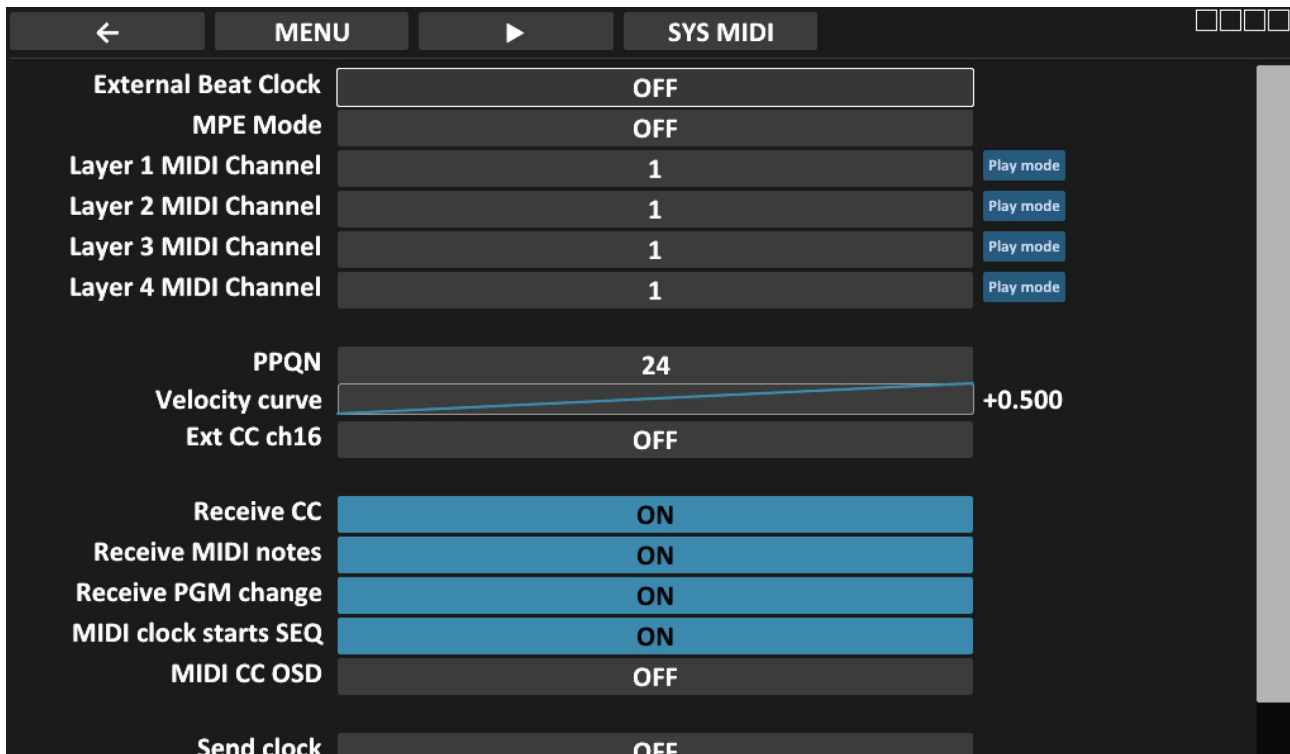
Display brightness

Does what it says. This CANNOT go all the way down to black. The GR-MEGA will not let you operate blind. It will remain at a very dim minimum.

LED brightness

Does what it says. This CANNOT go all the way down to black. The GR-MEGA will not let you operate blind. It will remain at a very dim minimum. But it can indeed go very dark for dark studios, without flickering.

MIDI menu



External Beat Clock

Turn ON to use MIDI beat clock for all synced parameters in the patches. Turn OFF to use the MEGA's internal master clock for this instead.

MPE Mode

Turn ON to let the GR-MEGA recognize your MPE controller's input. When this ON the notion of MIDI channels is gone, and the MIDI channel-to-layer mapping in this menu is disabled. It will darken to show these settings are then useless. An MPE controller will effectively control all layers.

Part 1..4 MIDI Channel

Allow a MIDI channel to control a layer. Only usable when MPE is OFF.

Play mode [for layer 1..4]

Turn ON to let the MEGA use its [▶] button for the selected layer.

PPQN

Set the amount of Pulses Per Quarter Note. This can go as low as 4, all the way up to 960. 24 is the default. 24 is the default for a lot of MIDI equipment, so leave it at this for most. Note that the GR-MEGA needs at least 48 PPQN to correctly quantize 1/64th grains and 1/64th notes.

Velocity curve

Adjust the velocity curve of your keyboard. Typically this should be some square root type function.

Ext CC ch16

NOT YET IMPLEMENTED. Turn ON to map the more exotic NRPNs (CC's ≥ 128) to CC's in MIDI channel 16.

Receive CC

Turn ON to handle MIDI CC messages. Filters them otherwise.

Receive MIDI notes

Turn ON to handle MIDI note on/off messages. Filters them otherwise.

Receive PGM change

Turn ON to handle MIDI program changes. Filters them otherwise.

MIDI clock starts SEQ

Turn this ON to let your MIDI controller start and stop the GR-MEGA's internal sequencer.

MIDI CC OSD

Previously known as "MIDI CC Visuals".

Toggle this ON to have incoming CC's displayed on the OSD in the bottom of the display.

Messages will read like:

"CC GRAIN SIZE 500.0ms"

If you send a lot of different CC's into the GR-MEGA, you may want to turn this OFF, because the OSD will change every 16ms, and this will make things unreadable.

Send clock

Turn this ON to let your GR-MEGA send MIDI beat clock information like START, STOP, CLOCK. Transmission of these MIDI messages is triggered by starting one of the GR-MEGA's sequencers.

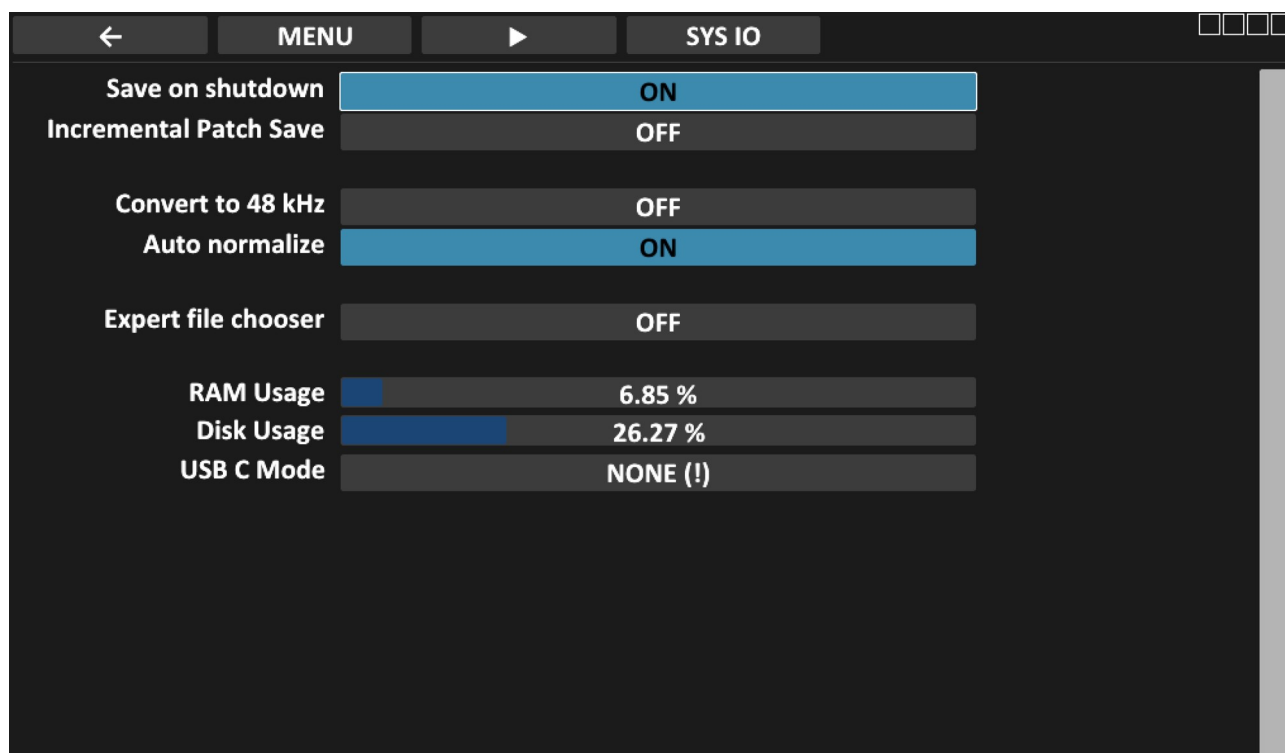
Send precision CC

Turn this ON to let knob turning send 14 bit CC's (NRPN's) instead of the normal 7 bit CC's

Send Seq notes

Turn this ON to enable the sequencer to sequence off-board MIDI gear. Note that the sequencers will also trigger internal GR-MEGA sounds. To exclusively use it as a MIDI sequencer you will have to reduce the layer volume to zero.

IO menu



Save on shutdown

Turn this ON for the newschool way that almost every app uses nowadays. The MEGA will save all unsaved changes to patches when it shuts down, and also it will save its system settings automatically. Turn this OFF, and you will be forced to save everything manually.

Incremental Patch Save

To be implemented, if enough users chime in. The feature was implemented in the GR-1, but a user survey revealed it didn't see much use.

Convert to 48 kHz

Turn ON to automatically convert imported samples to the native 48 kHz. Will take noticeable extra processing time.

Auto normalize

Turn ON to automatically normalize imported samples. Will take some extra processing time.

Expert file chooser

Turn this ON to skip the type selection dialog before you start using the file chooser (when pressing [Load]). OFF by default, as this is more beginner-friendly.

RAM Usage

Watch out when this hits 95%. You may not be able to perform copying or loading of large samples / patches. This will probably only happen if you use many very long field recordings as presets, or in the future very large multi-samples.

Disk Usage

Watch out when this hits 99%. You may not be able to perform saves or copying files with the manager. Please delete unnecessary files from your /media/internal user folder.

USB C Mode

Disable/enable USB C device features for maximum compatibility with windows, mac, and linux...
Press this to cycle between:

MIDI + FILES (default): MIDI and Samba file sharing, and SSH.

AUDIO ONLY: USB Audio Class 2 (UAC2) only. Guaranteed to work well on Macs.

AUDIO + FILES + MIDI: All of the above combined. When hooked up to a Mac and streaming audio, this can cause CPU spikes and drop-outs. Linux PC's are unaffected.

NOTE: USB C Audio streaming specs:

* Output (from MEGA to PC): 4 stereo channels (lower channels) + 1 master channel (highest channel)

* Input (from PC to MEGA): 4 stereo channels, but only the first one is used.

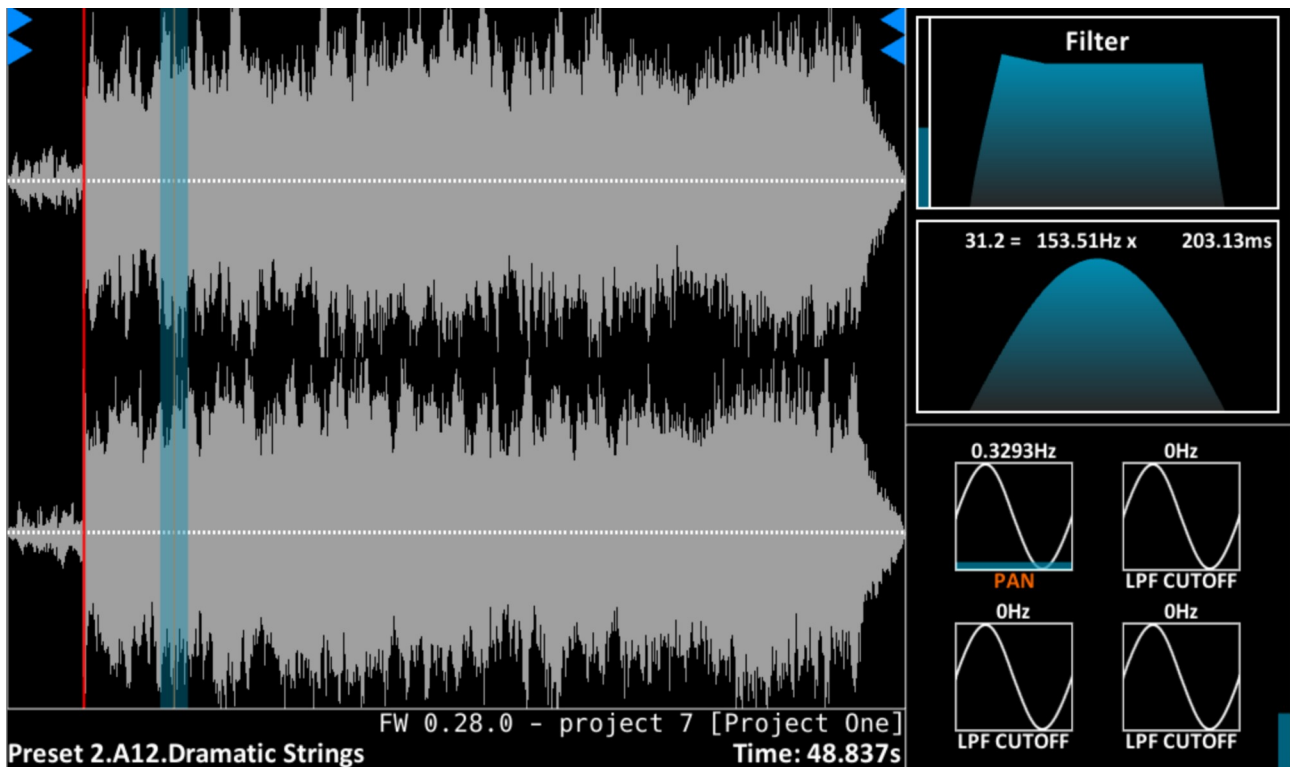
Recording samples

To start sampling first see to it that you've used the sampling menu described above, and make sure you enabled sampling start position. You can turn on "looping rec" as well if you want to use the GR-MEGA as a granular effect: for live sampling and replay simultaneously. It will then keep looping through its sample buffer until the user manually stops it.

Once you've configured this menu you can just press the [Record] button on the physical front panel. Stop recording by pressing the [Record] button again, or wait until it has reached the end of the buffer when looping is disabled.

If you press the [Menu] button you'll go back to the main screen where you can enjoy the action:

A red wiper should appear and should start running forward. If it stays still, then re-plug the USB cable. The GR-1 will now record the incoming sound into the buffer.

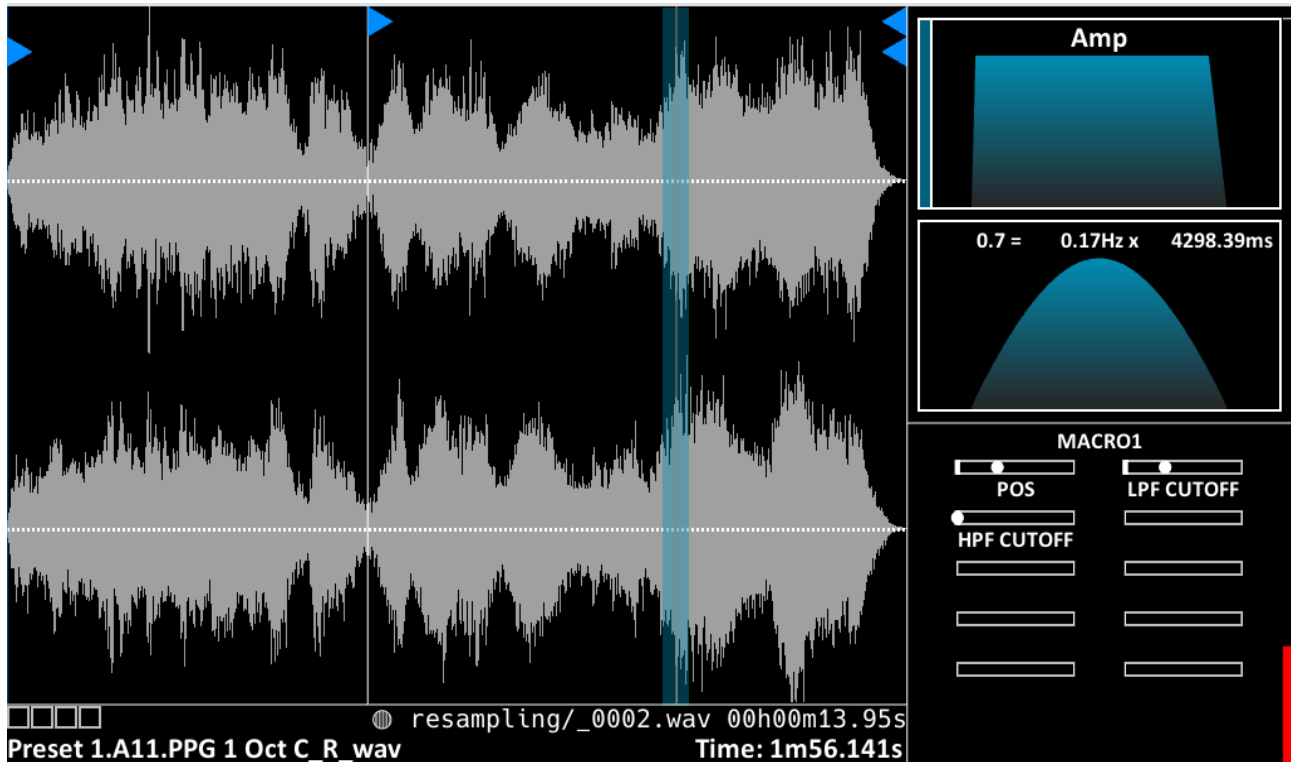


You can use the play button and scan knob to play through the buffer at different speeds, even backwards. You can use the play button, and even the sequencer to directly granulate or phase vocode the incoming live audio signal. All granular parameters and synthesizer parameters are also directly controllable while playing the recording sounds.

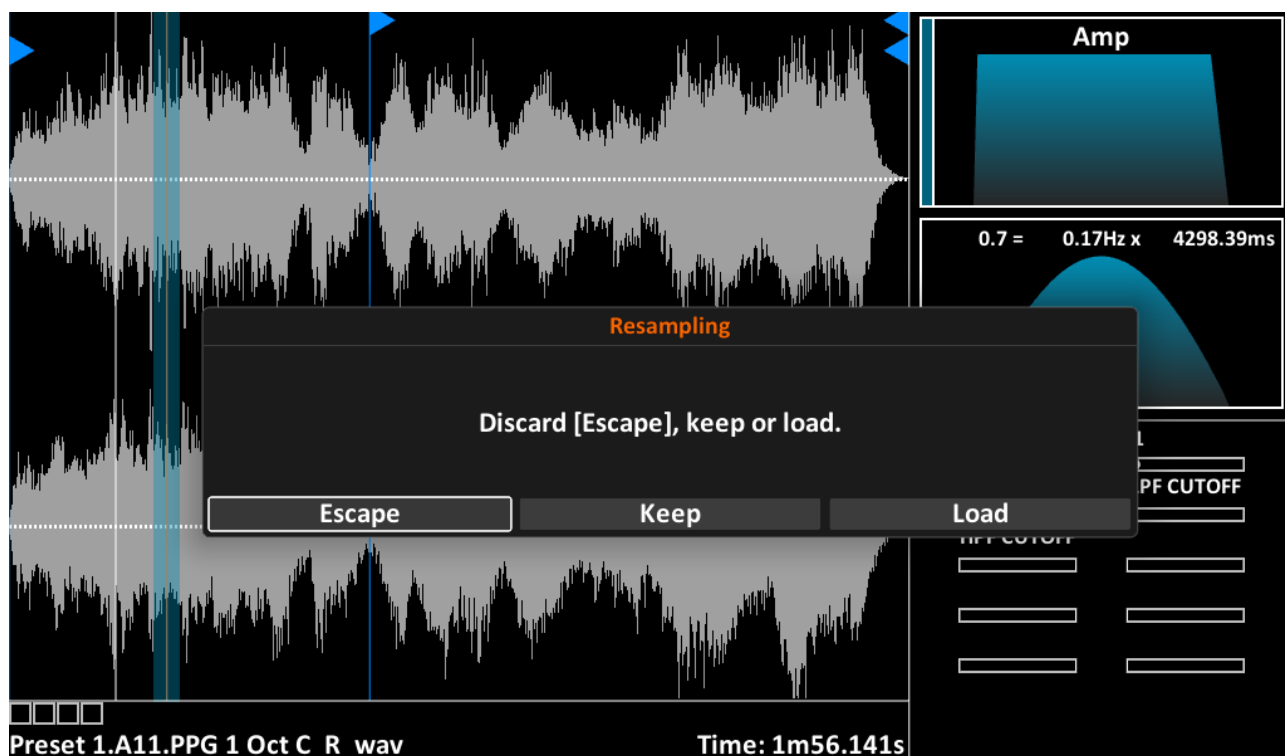
To stop recording, press [Record] once more.

Resampling

If you recorded in resampling mode, then things work as follows:

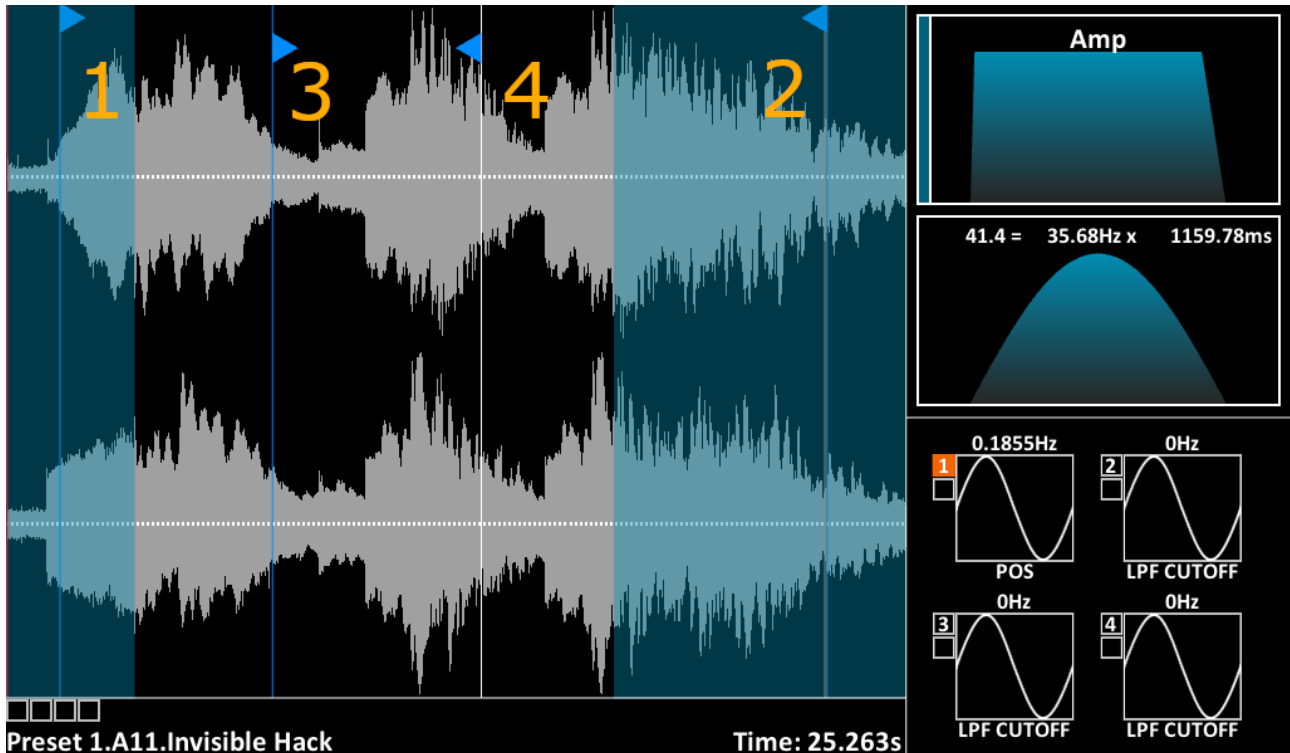


1. Select the “Resampling” source in the Sampling menu [Menu] + [Record].
2. Press [Menu] to go to the main screen.
2. Press [Rec]. The OSD on the bottom indicates you are currently recording to `resampling/<your_prefix>_XXXX.wav`. You can now use the play button and/or play MIDI notes for your recording. The sample you’re playing will be kept intact. The recording will be made to a background buffer.
3. Press [Record] again to stop. You will now be prompted with a dialog:
4.
 - A. Choose “Escape” to exit and throw away the newly recorded sample.
 - B. Choose “Keep” to keep the newly recorded sample on disk. The sample in the buffer will be kept.
 - C. Choose “Load” to keep the newly recorded sample on disk, and also load it to the current sample buffer. Now you can play around with the newly recorded sample.



Crop & Loop confinements

All of the sound engines support looping and stop positions, and cropping. In granular mode, looping is intended for the scanning motion. These are marked by flags:



Start End (loop) flags

1) Start flag : high, points to the right. Used for setting the start of the crop area. *NOTE: this is not the grain start position. The grain start position is always set by touching the position slider.*

2) Stop flag : high, points to the left. This has two purposes:

- Sets the end of the crop area,
- Sets the end point for the scan motion.

3) Loop start flag: low, points to the right. Does what it says.

4) Loop end flag: low, points to the left. Does what it says.

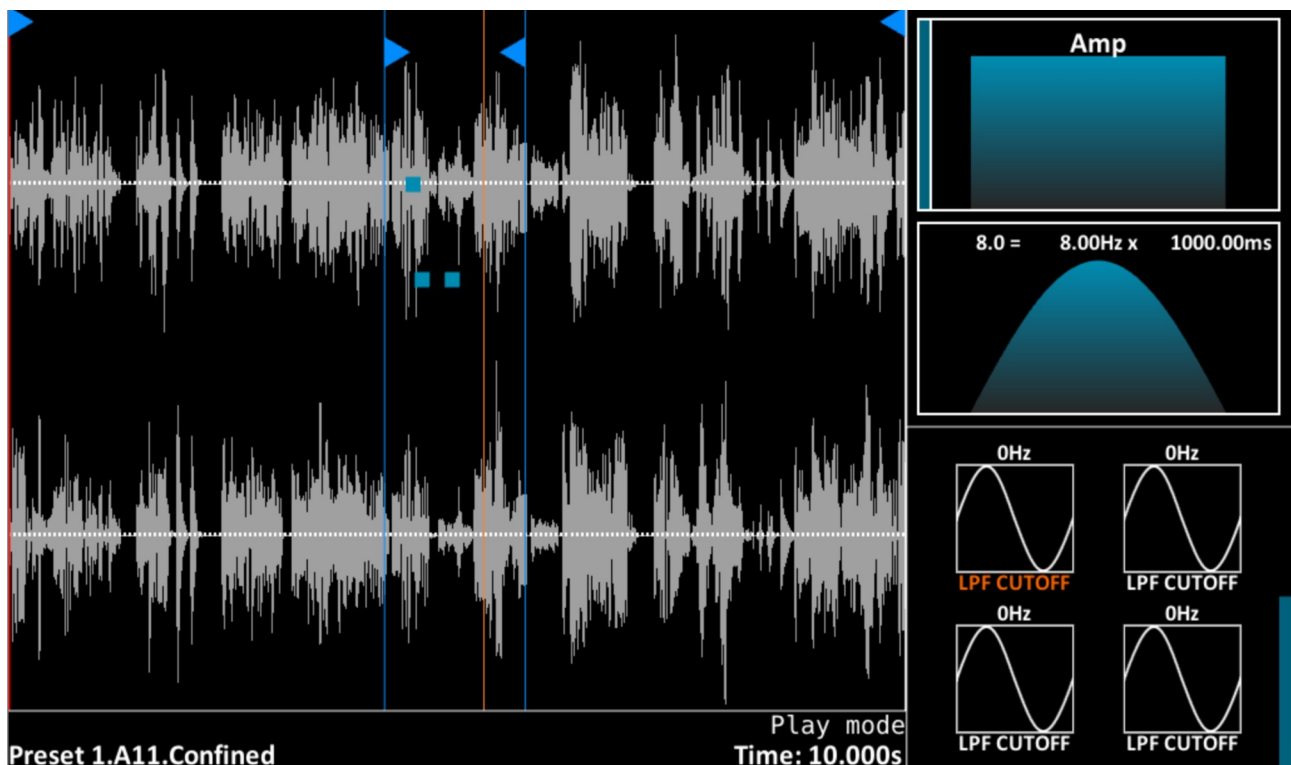
Sample Loop Confinement

You can use the loop flags: loop start, and loop end, to confine sample playback to a specific region.

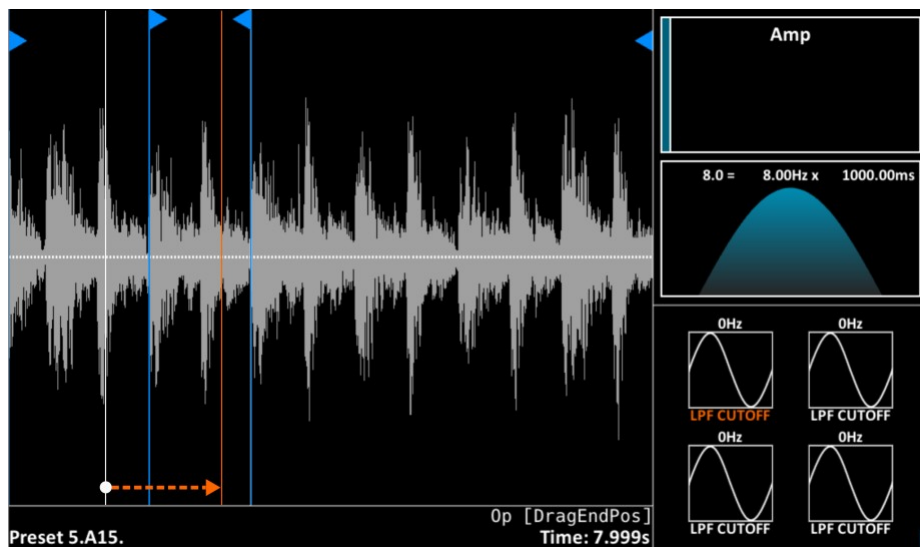
While the loop flags are used in the Granular and Spectral sound engines to confine scanning, in Sampler and Tape sound engines they are used to confine sample playback. The play heads will stay completely confined between the loop start and loop end. In these sound engines, especially in loop and one shot mode (Patch menu → Scan mode) there may be audible clicks and pops if you do not use zero crossings. Pingpong mode can somewhat remedy this.

1. Turn (Op Enc) to “SET LOOP START POS”.
2. Drag the horizontal slider to the position in the sample you want.
3. Press the [Exec] button next to (Op Enc).
4. Turn (Op Enc) to “SET LOOP END POS”.
5. Drag the horizontal slider to the position in the sample you want.
6. Press the [Exec] button next to (Op Enc).

Press [▶]. You'll notice all grains / play heads are confined to the region of your interest. Please note that changing loop start and loop end will only take effect in the sound engine when you play a new note!



Scan looping



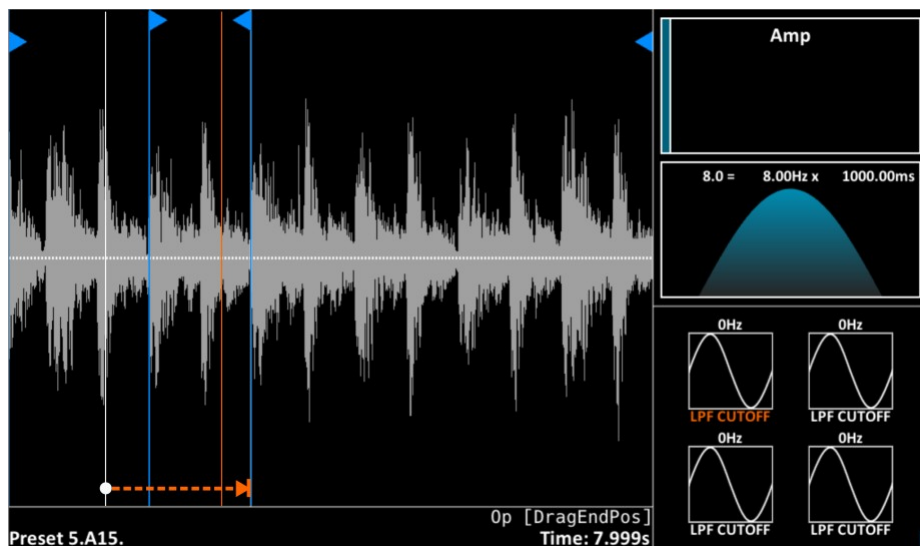
When a MIDI Note ON message is received, the Scanning motion starts at the white vertical line. The white line is stored in the preset, or is set by touching the slider position. Depending on the Scan setting it will move forward or in the reverse direction. You'll see an orange vertical line starting to move.

Scan mode (Patch Menu)

At some point the orange line enters the loop area. When it wants to exit the loop area it chooses depending on the [Scan / Slice mode] setting in the Patch menu.

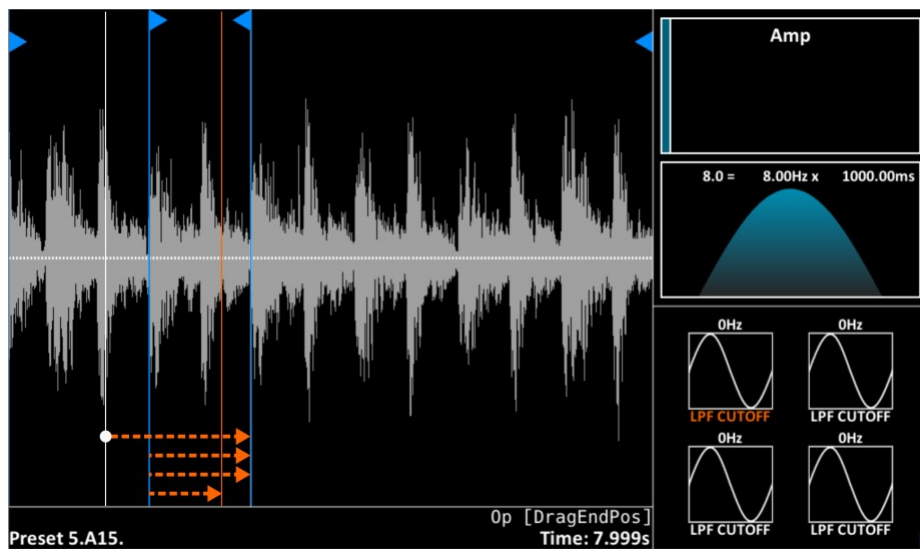
[One-shot]

Enters Loop confinement, stops at Loop Flag.



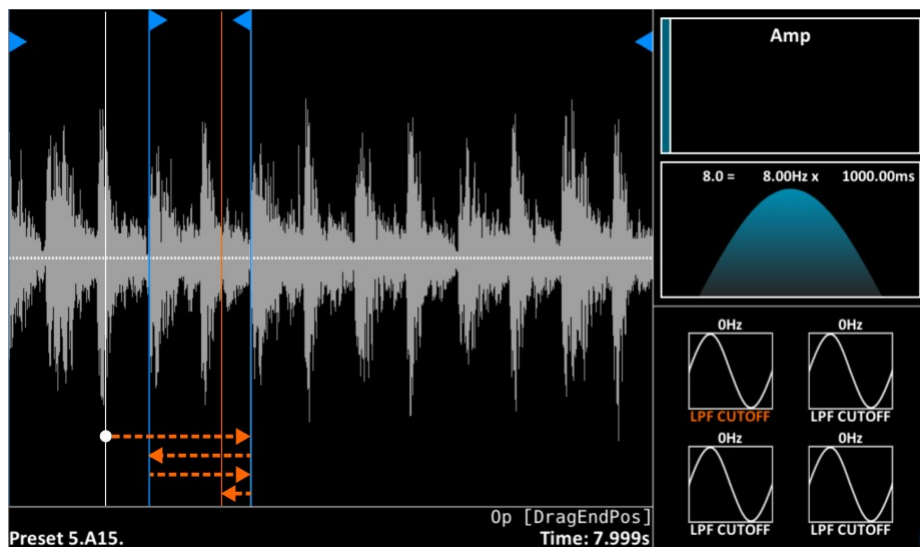
[Loop]

Enters Loop confinement, wraps in same direction when reaching Loop Flag.



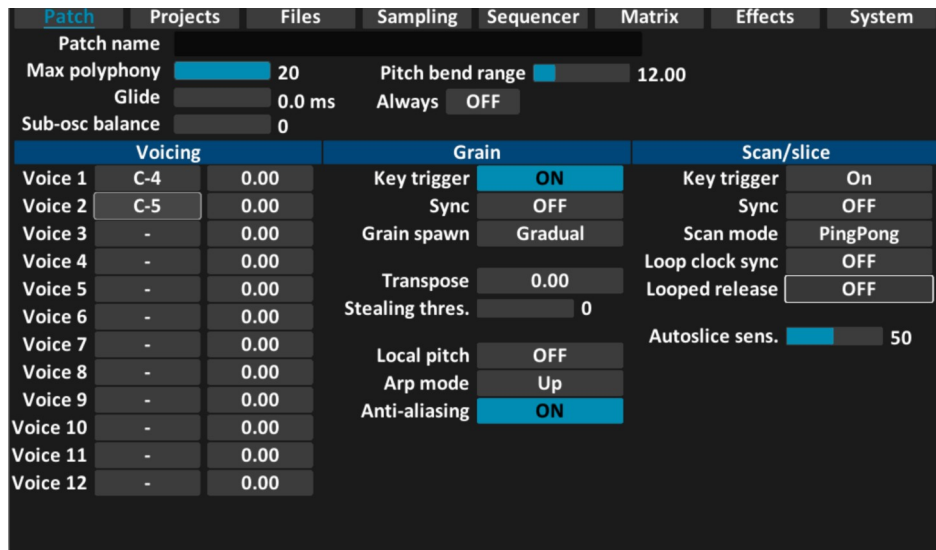
[Bounce]

Enters Loop confinement, bounces against Loop Flag into opposite direction.



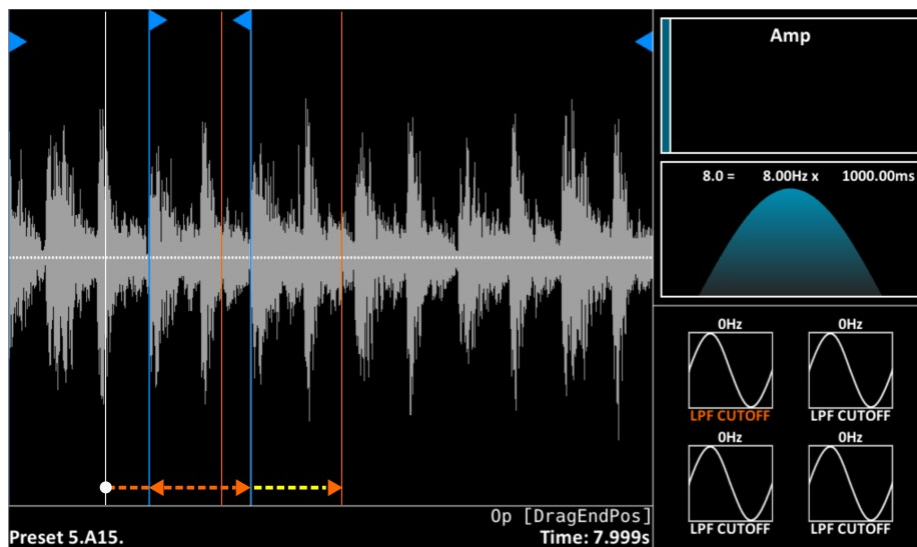
Scan Looped Release

When a MIDI Note OFF is received, the scanning motion either keeps looping or bouncing, depending on the [Looped release] settings in the Patch menu.



If Looped release is ON, it will continue to scan *inside* the loop confinement.

If Looped release is OFF, it will exit the loop area, but only if it has performed an even number (0, 2, 4, 6, ...) of loops or bounces.



Sample editing

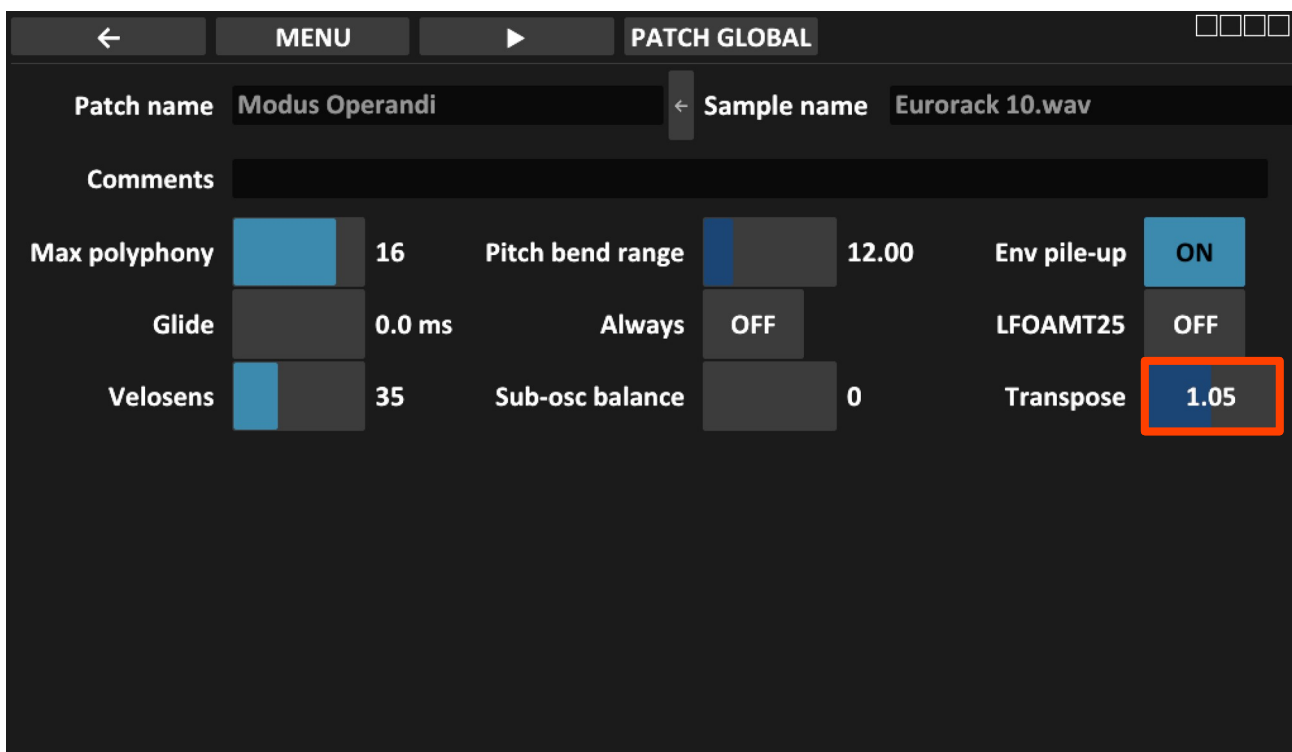
Sample Tuning

1. Go to Menu → Patch (Hold [Menu] and press [1])
2. Navigate to the column called “Grain” and to “Transpose”
3. Use the horizontal slider and/or turn (Op Enc) to transpose your sample in semitones. [Shift] + (Op Enc) fine tunes.

Using your ears you can now tune it using the on-board tuning sine. Hold [Shift] and press [Sub] (in the lower right region of the front plate). The tuning sine will activate, and you’ll hear the central C (approx 261 Hz). You can transpose your sample to match the C.

You can also choose to use the Pitch knob for this purpose, but it’s more often used live for performance.

Here we use the transpose option in the Patch menu to transpose the pitch up by 1 semitone and 5 cents:



Sample Normalize

1. Turn (Op Enc) to “Normalize”
2. Press the [Exec] button next to (Op Enc)

Note: the GR-MEGA can automatically normalize samples when loading them. This means that you don't need to normalize samples. You'll probably only need to do it after cropping.

Sample Crop

Sample cropping can be done in three ways:

Crop Zoomed

This way is easiest.

Just turn the (Op encoder) to “ZOOM IN OUT” and hit the [Execute] button. Of course you can also use [Shift] + (Op encoder) to zoom in and out. You can scroll with the arrow keys [←] [→], and also use [Shift] + the horizontal fader to scroll quickly.

Then turn (Op Enc) to “ZOOM CROPPED”, and hit [Execute]

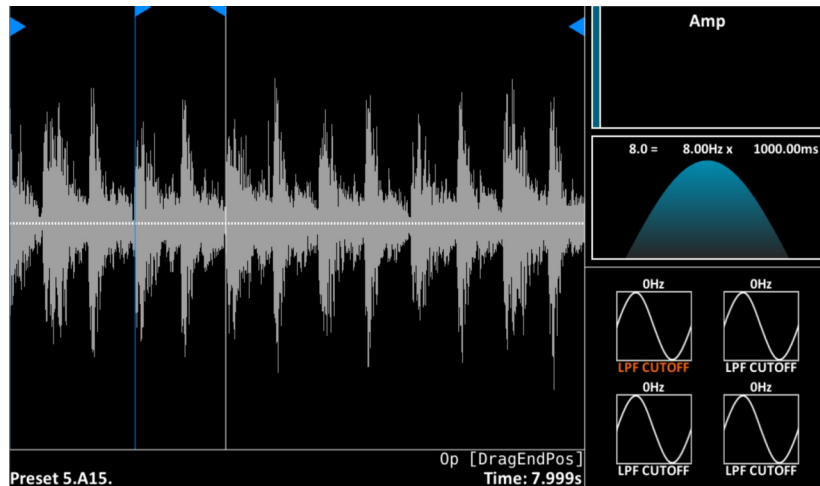
Crop recorded

After recording, turn the (Op Enc) to “ZOOM RECORDED”, and hit [Execute]. This will crop everything up to the record head: the **RED** line.

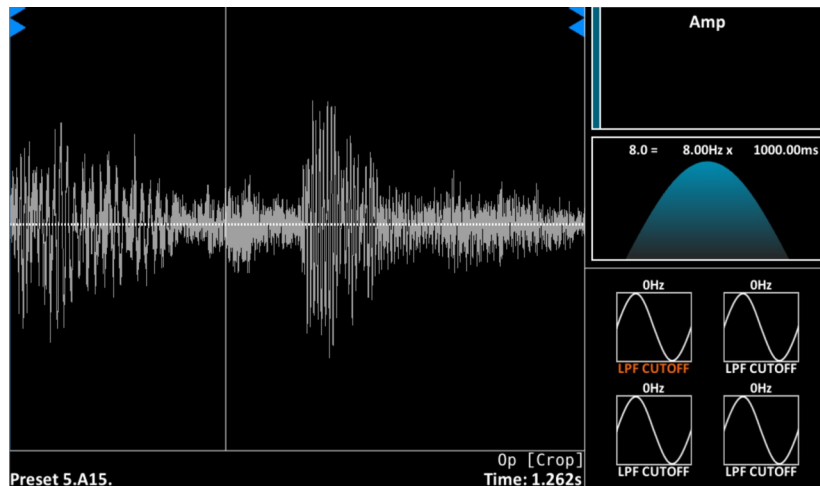
Crop start-end

This way is more complicated, but will allow you to make high precision crops.

1. Turn (Op Enc) to “DragStartPos”
2. Drag the horizontal slider to the position in the sample you want. *Tip: You can use zooming to fine tune sample position: Hold [Shift] and turn (Op Enc) right to zoom in. Turn left to zoom out.*
3. Press the [Exec] button next to (Op Enc). This will set the Start marker.
4. Turn (Op Enc) to “DragEndPos”
5. Drag the horizontal slider to the position in the sample you want
6. Press the [Exec] button next to (Op Enc). This will set the End marker.



7. Turn (Op Enc) to “Crop”
8. Press the [Exec] button next to (Op Enc)
9. Your sample is now cropped to the range between the start and end flags.



Soft cut

Cropping can cause jumps in the signal, when not done at zero crossings, and even zero crossings can cause somewhat artificial sample loops. To counter this effect, we offer a “soft cut” toggle. Turn this on to crossfade the start and the end of the crop region. Note that this will shorten the resulting sample a tiny amount.

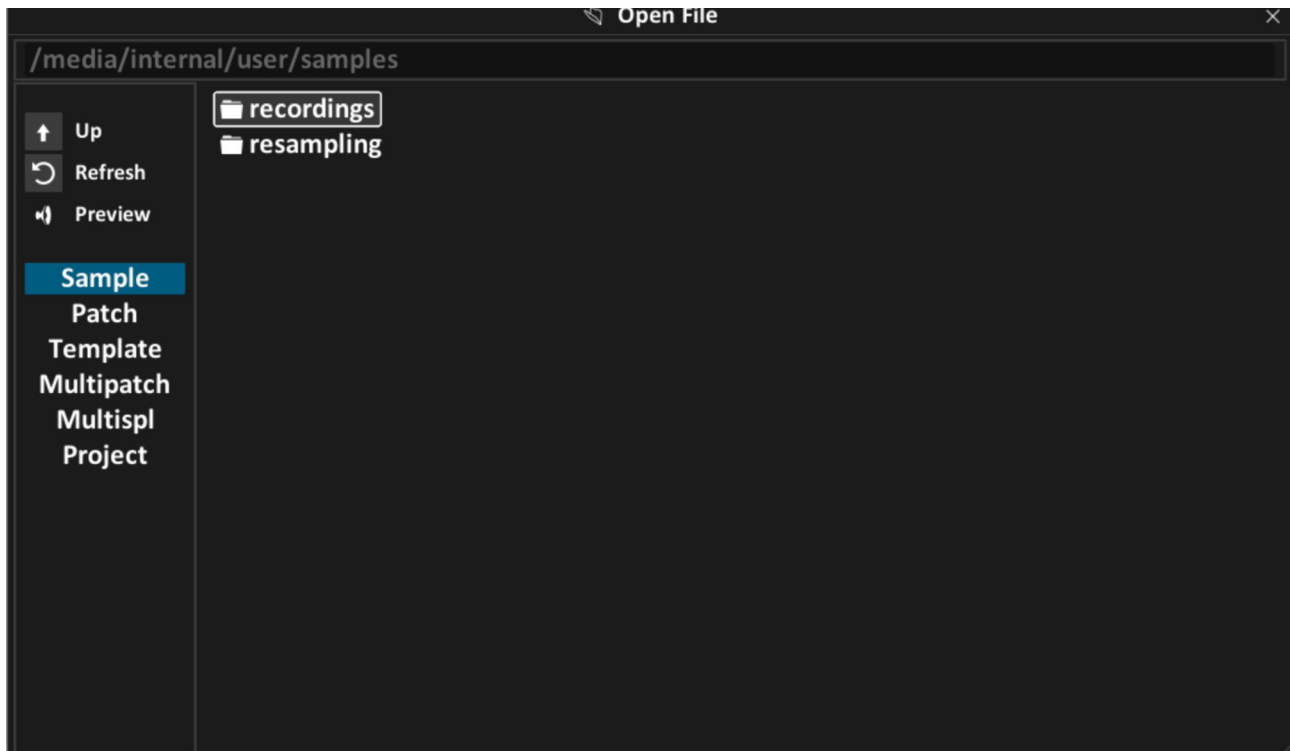
Turn the (Op Enc) to “Soft cut” and then hit [Execute] to toggle it ON or OFF.

Saving & Loading

Loading

Loading (not to be confused with recalling, which is done with button combos) is typically done with the file chooser.

Press the Load button to open it.



On the top left there are navigation options, on the bottom left you can choose the data type. On the right there's you can navigate through the folder contents. Select a data type, and then navigate to the file you want to load, and press Load again.

Press Enter on the loudspeaker icon (🔊) to enable sound previews. You can now hear the wav file under the cursor. Use the horizontal fader to fast forward through the preview. [Shift] + [Play] lets you manually preview the sample, just like in the main screen.

- * Press Load button
- * Navigate
- * Press Load button again

In 80% of the cases you'll use this to load samples.. Samples that you recorded, or from USB stick, or samples you copied to internal storage earlier on using the File manager.

Other data types are supported as well. You'll sometimes save patches to use (copy) them in another project. The same goes for templates, and because they can be used on to make several patches, you'll want to store them some place central. Multipatch aka multi layer stacks are almost never saved separately, but it's possible to load and save them.

Finally, projects can be saved and loaded with the file chooser, most often to make backups to USB.

Supported sample formats

WAV: Loading and saving. Almost all variants, 8,16,24 bit integer, 32 bit float. Will also import cue points into slice mode.

AIFF: Loading only. Most variants, except proprietary Ableton encoding. At the time of writing AIFF sound previews are not possible.

FLAC: Loading only.

SFZ: Loading only, will switch to slice mode. Will only load loudest velocity layer. Key groups are duplicated into multiple sample rate converted slices.

Supported patch formats

GR-1: folders with .grp + .wav files. loading only

GR-MEGA: loading and saving

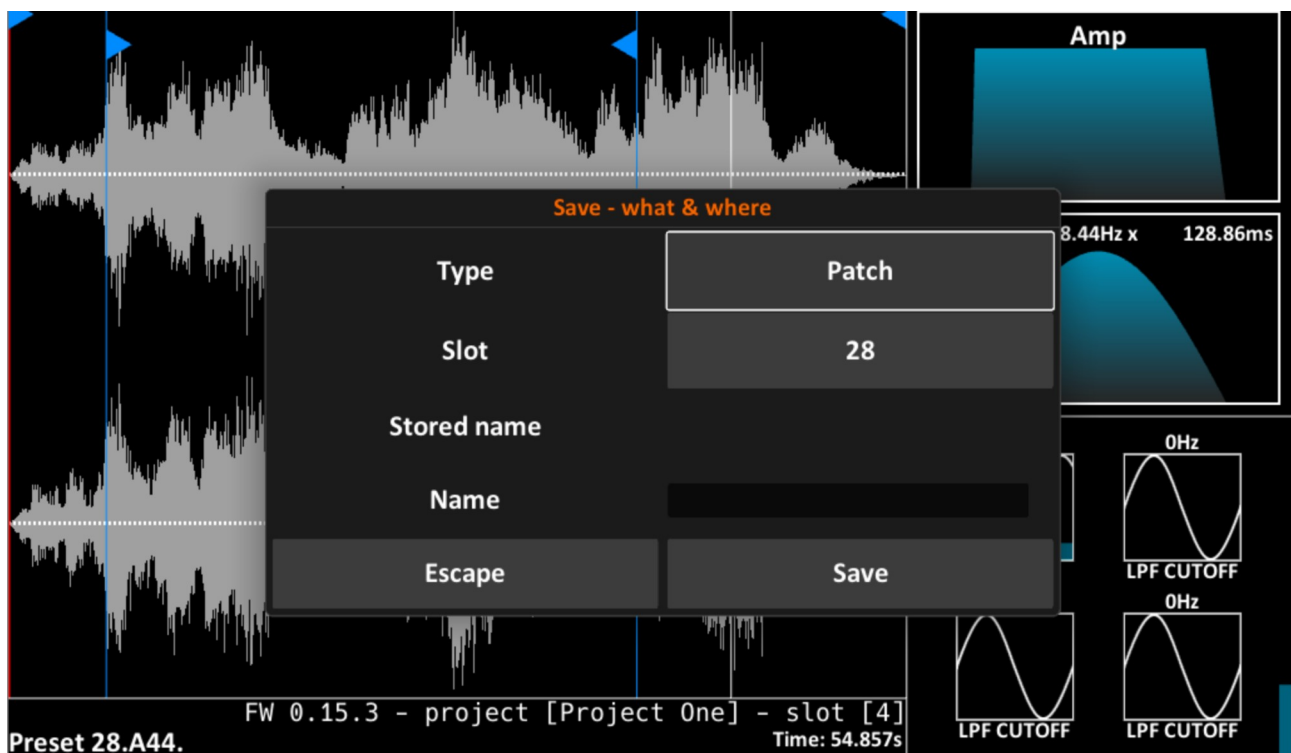
Saving

Saving is typically done by just pressing [Save]. There will be a confirmation dialog asking you to save changes or to escape. This is *context sensitive*. If you have only 1 layer visible, it will save the (monotimbral) preset. If you have multiple layers visible, then it will save the multi(preset)*. If you have just recorded a sample and then press [Save], it will prompt a more complex dialog, allowing you to save sample, preset or multi. Typically, saving your progress means just pressing [Save] twice. After reboot the project will recall like how you left it.

Saving can be done in detail with the save dialog. Hold [Shift] and press [Save].

You can also toggle this on permanently:

[Menu] -> I/O -> Expert save dialog -> ON



Most often you'll save edited or recorded samples. Select the Type, name the sample if you want and then press Save. The sample is then written to the internal storage at:

```
/media/internal/user/samples/
```

Patches can be saved to slots with the save dialog. Typically, you'll just save your progress with the current patch this way.

1. Press [Save]
2. Select type Patch (or keep it, if it was already selected)
3. Press [Save] again

Typically, that's just pressing save twice.

You can also save to another preset slot to make a sort of backup. Patches are not saved to custom folders or USB this way. Use the file manager for this. Multitimbral stacks, and templates can be saved in exactly the same way.

Projects can be renamed and saved to the current project slot or another slot in the same way (Remember: there are 50 project slots and 128 preset slots per project). When the project data type is already Project, you can just press save twice.

*: Since firmware 1.7 multi presets are *standalone*. Prior to 1.7 they were just 4 *references* to monotimbral presets + volumes. This means that saving multi presets, will no longer change monotimbral presets. This should make for a more intuitive and free-form workflow.

Undo

Saving will set a new *undo point*, meaning a point you can return to if you want to discard your recent changes.

Actions that will set a new undo point:

- * Save patch
- * Save project
- * Load project or GR-1 performance

Actions that will not set a new undo point:

- * Loading or saving separate patches
- * Loading or saving samples

Note that this list changed in firmware 1.5.3.

Our philosophy is that loading samples or patches is typically for *experimentation*. Is this the sound I'm looking for? Mostly not, so just rewind and let's try another sample or patch. If yes, let's save to keep it.

Undo your changes by pressing the current preset button, or since firmware 1.5.2 press [Shift] + [Enter].

GR-MEGA Data types

Samples

The GR-MEGA is sample based device. Every sound it makes is made by using samples. The sample is the most basic data type the GR-MEGA understands. It can be loaded from disk as WAV or AIFF files, and saved as a WAV file.

Template

A template means all knob tweaks and menu parameters that influence sound generation. For example: the position in the sample, the number of grains per second, and the low pass filter cutoff. In total this is hundreds of parameters. A template can loaded and saved to/from disk, but it is often only used as a part of a Patch. It's mostly used to initialize patches, but can also be used to copy settings from one preset to the other.

Templates are stored globally: `/media/internal/user/templates`

Patches

A patch consists of a sample + a template. A template can be very generic, meaning it can have settings that, for instance, suit to some ambient pads, but it can also be highly specific to the used sample. For instance, a drumbeat can be sliced up at very specific points (kick, snare, hi-hat, etc). That's why each patch comes with its own template data.

A stored patch that's recalled by button combination and by MIDI is called a "preset". Let's say you press bank button A, sub-bank button 2, preset button 7 this will recall preset A-2-7 : preset 16.

Remember: *a preset = just a stored patch.*

Multitimbral patch / stack

Also called "multi's" or simply "stacks", these are configurations of up to 4 layers. The layers refer to (monotimbral) presets. Layer volumes are also stored here, because they are important to recall when performing in multi timbral mode. There are a number of stacks you can immediately recall by using Shift + the bank & preset buttons.

Because multitimbral presets are just a couple of references to monotimbral presets + layer metadata, workflow is as follows:

1. Design your monotimbral presets.
2. Arrange your multitimbral patch by referencing monotimbral presets in each layer.

The multitimbral preset structure may change in later firmware versions to contain their own samples, and their own patch data, without referencing the monotimbral presets.

Projects

Projects are the biggest collection of data. A project is much like a project in a DAW on PC/Mac. To make things easier, projects are simply stored in a list of 50 slots. Projects can be easily loaded and saved by accessing the project menu, which is basically just a long list of project names. More about this in the Menus Chapter, section Project menu.

A project contains:

- * 128 presets (meaning 128 patches = 128 samples + templates)
- * 128 multis (multi timbral presets)
- * the project name, global BPM, rate (division)

System settings

System settings contains things like brightness of the display, and LEDs, MIDI device configuration, clocking settings, etc. Things you typically set up to your own user preference which influence the entire system. System settings are saved in the system menu. They are recalled at startup, and cannot be loaded from or saved to USB.

Multisamples

This means a sample for each key. At the time of writing load and save of this data type is not supported and planned for v1.6. Only in a later firmware.. perhaps 1.9 or 1.10 will the GR-MEGA support multisamples.

File sharing

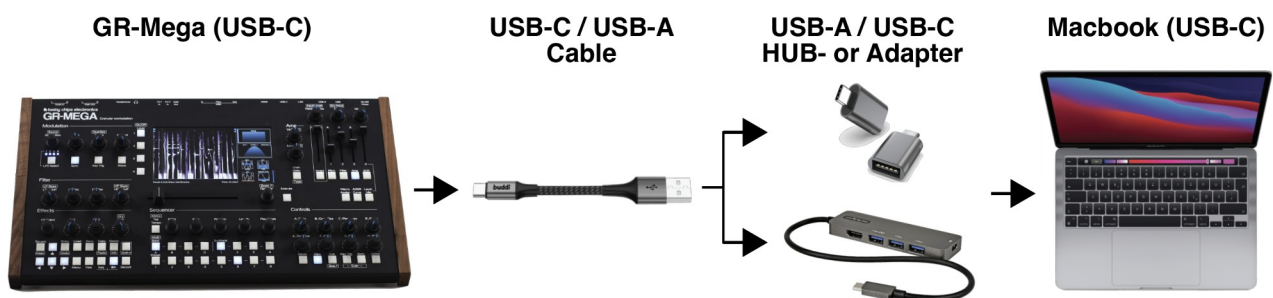
The GR-MEGA can share files over the LAN port, but also over USB C. The GR-MEGA can make sound when sharing files, and does not need to be restarted to enable file sharing. A physical connection is all that is required. You can use this as an alternative to the internal File Manager. All actions will be done from your PC/Mac.

Setup

Step 1 - A) USB C (Linux and Mac)

Use a USB C cable to connect your GR-MEGA's USB C port with your PC or MAC. If you have a USB C port on your Mac, it could be you need a USB C → USB A adapter and a USB A → cable. Please note that the hub or adapter/dongle should be on the MAC side!

[GR-MEGA's USB-C port] ↔ [USB C-to-A cable] ↔ [USB A-to-C adapter] ↔ [Mac]



Step 1 - B) LAN port (Linux, Mac, Windows):

Using a standard RJ45 network cable, hook up your GR-MEGA to your router, modem, or directly to your PC.

Step 2. In Finder (Mac), Windows Explorer (PC/Windows) or in Files/Nautilus (Linux) you should see the name “GR-MEGA” advertised under “+ Other Locations”. On Mac and Linux this is on the left side of the window.

On Windows 11 it seems to be the case that you may need to use the function “Add network location” or “Add network drive” and enter [\\GR-MEGA\\internal](#)
See below for step-by-step Windows 11 screenshots:

Step 3. On your PC/Mac click on the GR-MEGA to browse the files in its internal storage (“/media/internal”). No user password is necessary, just choose to login as guest.

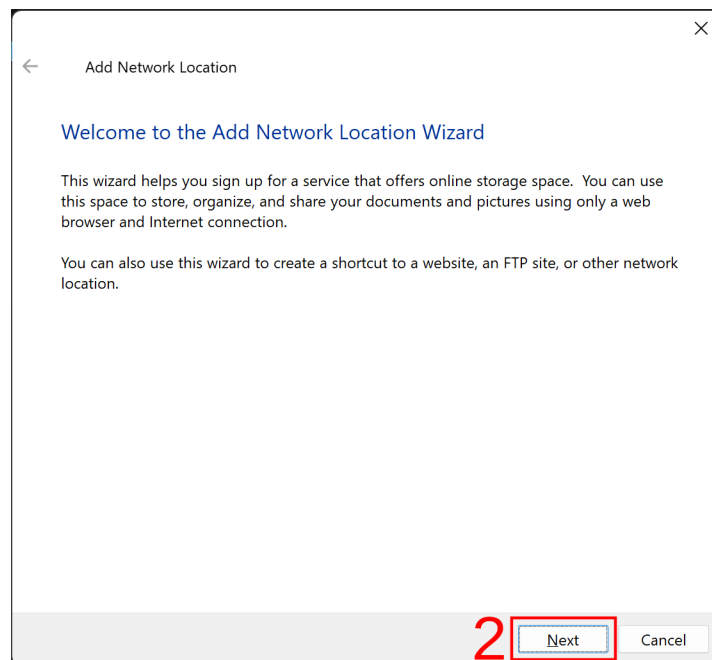
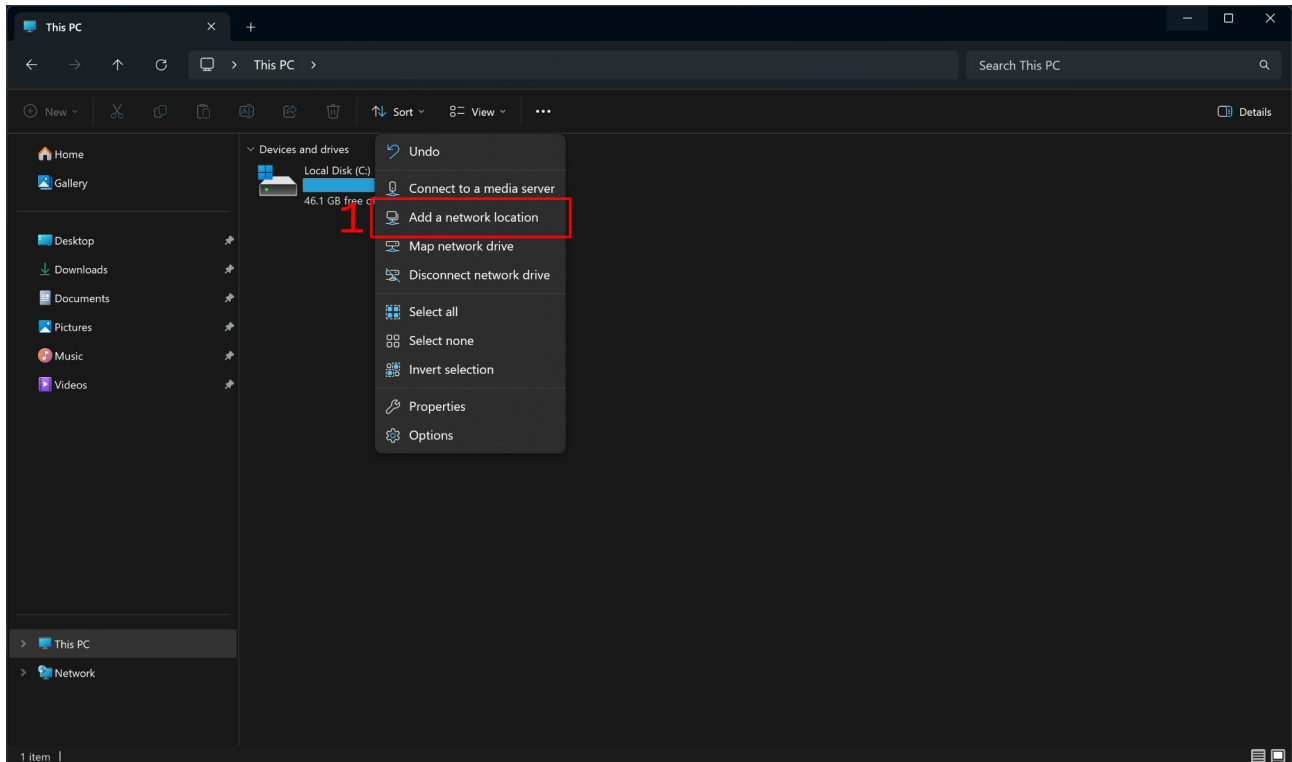
Note

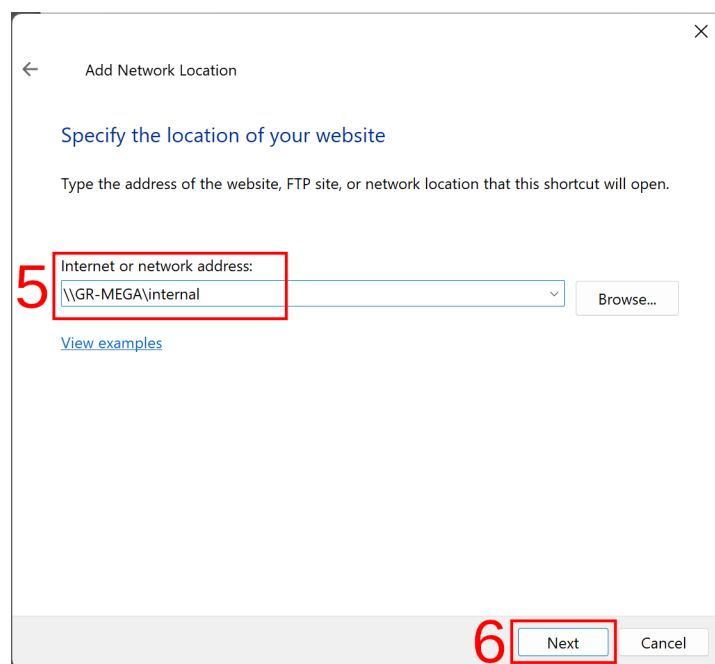
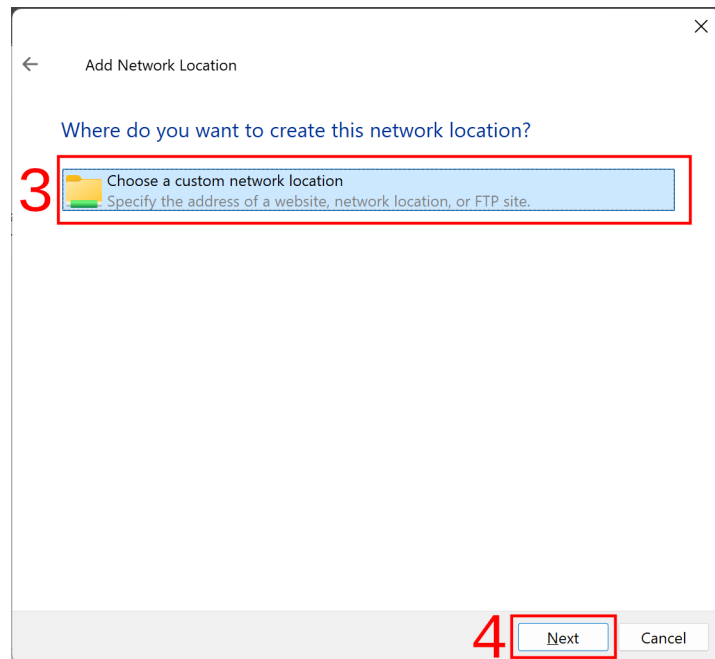
By default the /media/internal/projects folder and /media/internal/user/samples cannot be written into. From firmware 1.4.2 onwards, the firmware makes these folders writable.

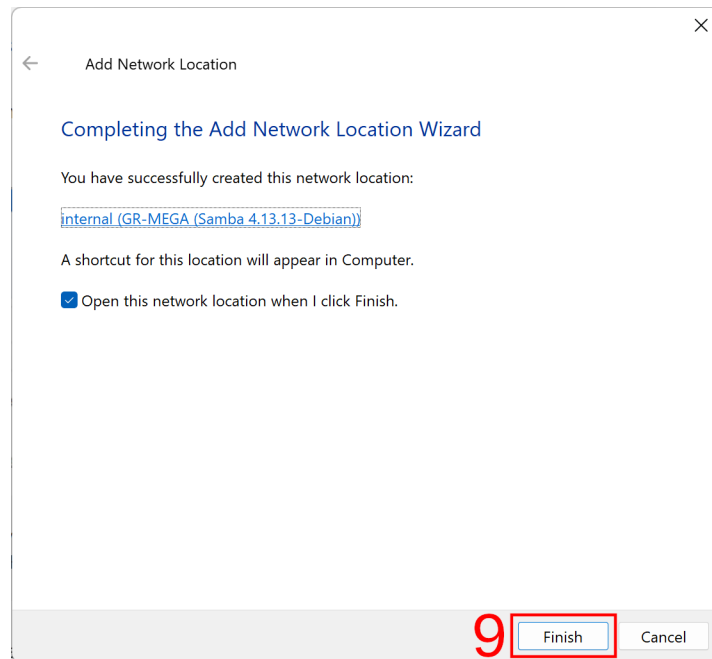
Important

The GR-MEGA does not have a recoverable trash can. A deleted file is permanently gone!

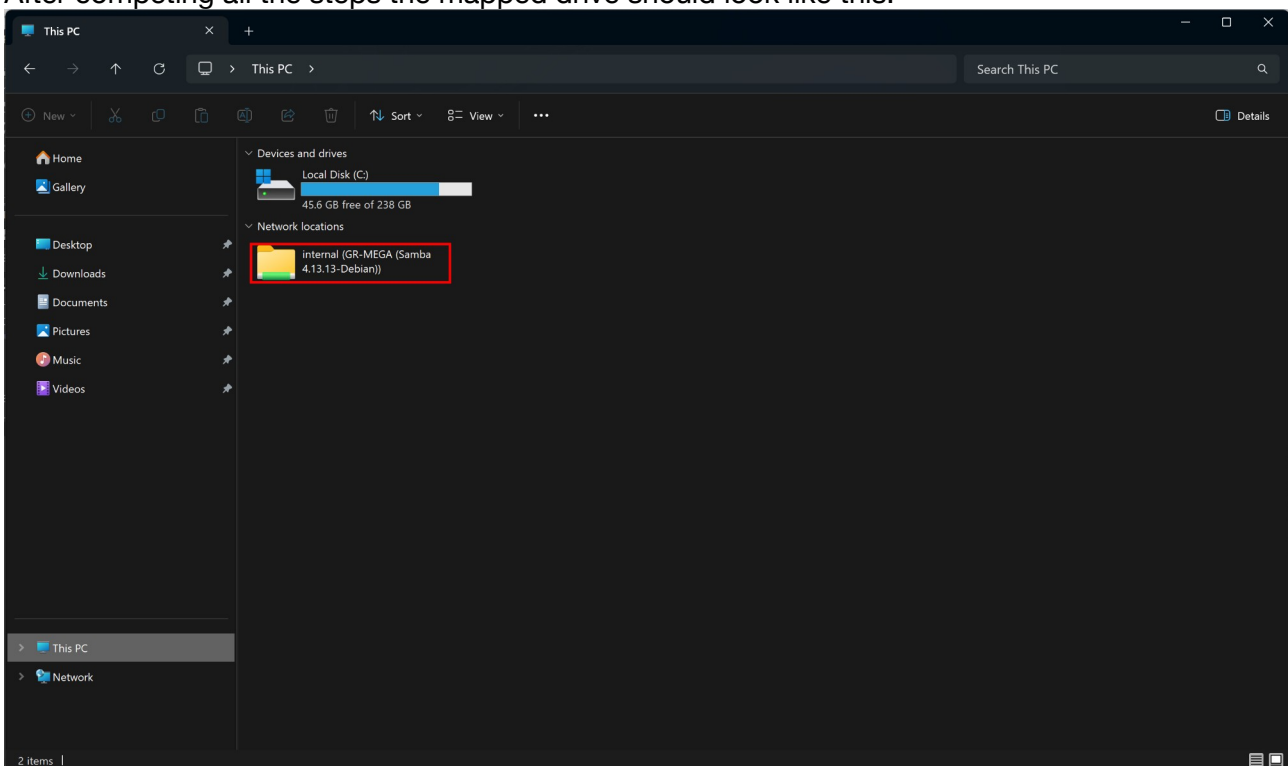
Windows 11

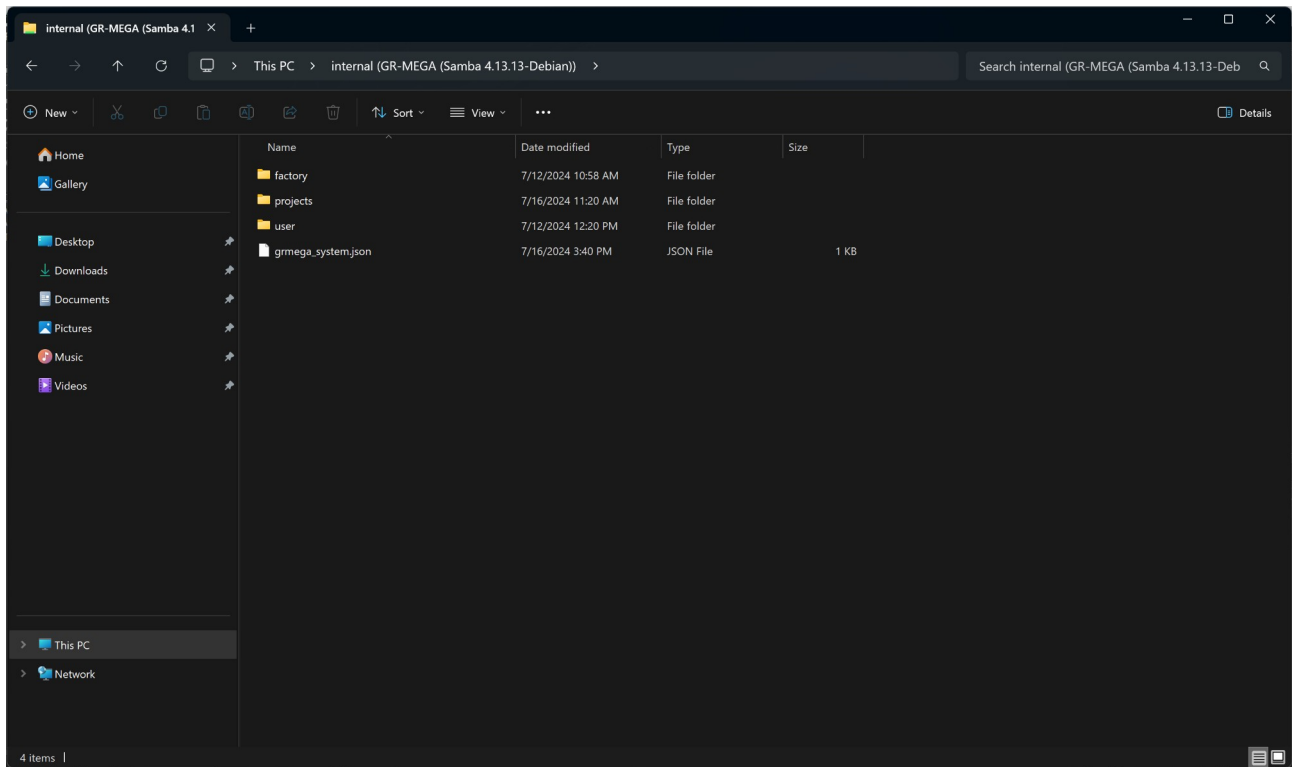






After completing all the steps the mapped drive should look like this:





Polyphony

This section explains the GR-MEGA's forms of polyphony, the voice stealing algorithm, the grain window, and how to make the best of them. This applies to all sound engines, but especially to the granular ones, and the spectral engine which is the most CPU intensive of all.

Forms of polyphony

The GR-MEGA has two forms of polyphony:

- Grain polyphony: 128 grains per voice,
- Spectral polyphony.. 12 chord notes per voice,
- Voice polyphony: corresponding to playing notes: 20 voices at the time of writing.. and 3 voices for spectral mode.

Voice timbre

A voice may have anywhere from 0 to 128 grains playing at any time. This allows the flexibility to have a single grain playing (sporadically) up to a massive “cloud” of grains. No amount of playing notes will cause the amount of grains to be modified by the engine. The timbre of the voice will be kept intact as much as possible.

The same principle applies to the spectral sound engine. Higher polyphony will never influence the timbre. However, since spectral mode is (FFT) block based.. larger FFT sizes will increase engine latency. Using 3 spectral voices in 1 layer will be ok, even with 4096 or 8192 point FFT sizes, but doing this in multiple layers at the same time will risk audio drop-outs!

Note hold

The GR-MEGA supports the MIDI hold CC. All new notes will remain playing even if your fingers were lifted from the keyboard. This remains this way until hold is turned off again.

Voice stealing

When the GR-MEGA reaches maximum voice polyphony and the user presses yet more notes on the keyboard, it will choose to abruptly remove the oldest playing note, preferably already in release, that is not being held (by the hold CC explained above). It also makes choices based on the position of the notes on the keyboard in relation to each other. This should make note polyphony as full and responsive as possible.

Grain stealing

(Granular sound engines only) When the maximum amount of grains per voice (128) is reached, the grain scheduler will stall until grains have reached their end. This results in an oscillation effect where there's a big bunch of grains in one place and nothing elsewhere. Grain stealing remedies this effect. It will steal grains in a way that is inaudible to the user: no crackles or clicks. The only drawback is that it (logically) shortens grains. This depends a lot on the Grain stealing threshold setting. See the patch menu.

Audio, and avoiding drop-outs

Since the GR-MEGA has relatively modern digital hardware, audio drop-outs will not be common, unless you really push it. In terms of granular power, it can handle 4 layers at the same time with multiple voices and a bunch of grains per voice + each layer running 4 effects.. even with the large reverb and compressor effects.

An important thing to remember is that using USB C audio and MIDI at the same time will increase CPU demands drastically, so use audio only or MIDI+files only if you want to get the highest polyphony.

The spectral engine (Phase vocoding) is more hungrier than granular in terms of processing power. 1 layer is typically fine, but 2 layers can already cause problems. You may need to reduce the amount of effects or reduce the FFT size.

Further notes about granular polyphony.. if you're using 4 layers, effects.. Although this text is lifted from the GR-1 manual, and the GR-1 has only 1/3rd of the processing power.. it can still apply if you are combining granular and spectral:

It is important to remember that granular synthesis is random in nature. Too much and too scattered access to sample memory will result in a high strain on the engine..

- Maximum voice polyphony is caused by long envelope release and fast playing on the keyboard.. Beware, the GR-MEGA allows 45 second long envelope release!
- Maximum grain polyphony is caused by high grain size and density.
- High spray and long samples will cause scattering of sample memory access.

A suitable comparison is cooking with only 4 burners on your stove, but having a lot of pans around. The more powerful your hardware is, the more burners you have. The larger the sample, the higher the spray, and polyphony, the more pans you'll have around. You'll have to swap out many pans many times which causes slow downs.

The combination of the above factors can cause audio dropouts. The solution is to be aware of them, and apply some practical knowledge:

- If you desire long releases and many playing notes: consider limiting spray and/or choosing shorter samples. Alternatively, choose a short envelope release and use the built-in delay effect or use an external reverb that can generate long releases.
- With longer grains, it's often enough to have a density of 100 grains per second.
- The on-board play mode can be adequate for drones, by just using 4 voices.
- Anti-aliasing may be turned off. This is not recommended, but the aliasing sounds can be used creatively, in some cases.

Master volume and patch volume

When note polyphony increases the total volume will also increase. There is no compression on the end mix, so it will start *hard clipping* the output. So keep in mind that you can lower the volume with the master knob.

Grain window modification

For the sake of simplicity and optimization, there is only a single global grain window per part. This means that any change to the window while it is playing might result in crackles. However, if

the change is gradual and the window shape is convex (that means not pointy), the crackles will be minimal.

Temperature and the internal fan

When the strain on the engine increases the electrical power consumption of the computer in the GR-MEGA also increases.. which, after a while, leads to higher temperatures. The GR-MEGA has an internal fan which is intelligent and spins faster at higher temperatures. At 20C room temperature and normal work loads it should be almost imperceptible. You may be able to hear it at high polyphony and in warm studios.

Tutorials

This chapter contains a number of tutorials intended to get you started. More advanced tutorials for actual sound design (leading to actually usable and impressive patches) can be found on our Youtube channel:

* Designing a granular patch with the GR-MEGA:

<https://www.youtube.com/watch?v=mav7oJWiswA&t=633s>

* Setting up the GR-MEGA in slice mode to jam with a groove box:

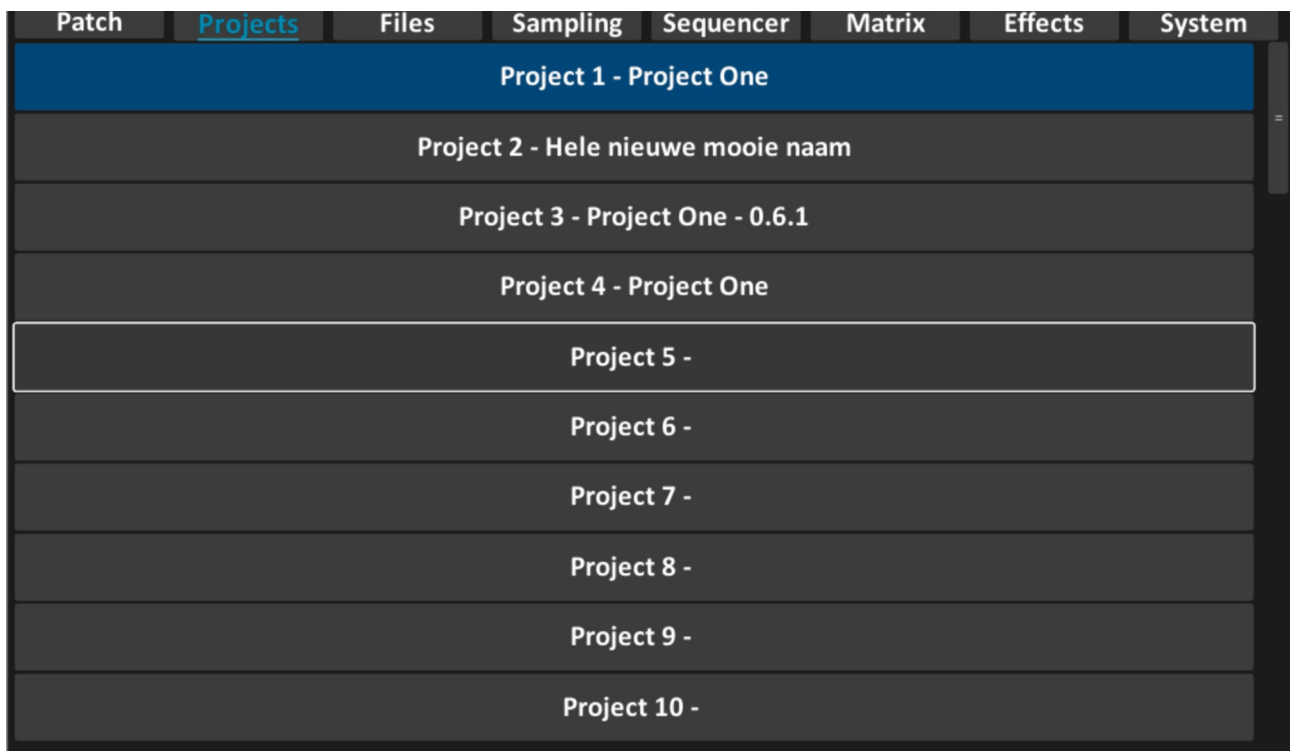
<https://www.youtube.com/watch?v=mav7oJWiswA&t=1003s>

.. and in the same video there are many other tutorials to make use of the GR-MEGA's sound engines.

Our earlier video tutorial for the GR-1 is also a good one to watch. It will teach you how to make typical granular patches. The way the GR-1 works in granular and tape modes is very close to the way the GR-MEGA works.

Initializing a patch

1. Open a new project. Either;
 - a. Menu → Projects → Navigate to an empty one and press Load.
 - b. Or just stay in the main screen to init an existing patch.



- 2.A.
 - I. Exit back to main screen by pressing Menu.

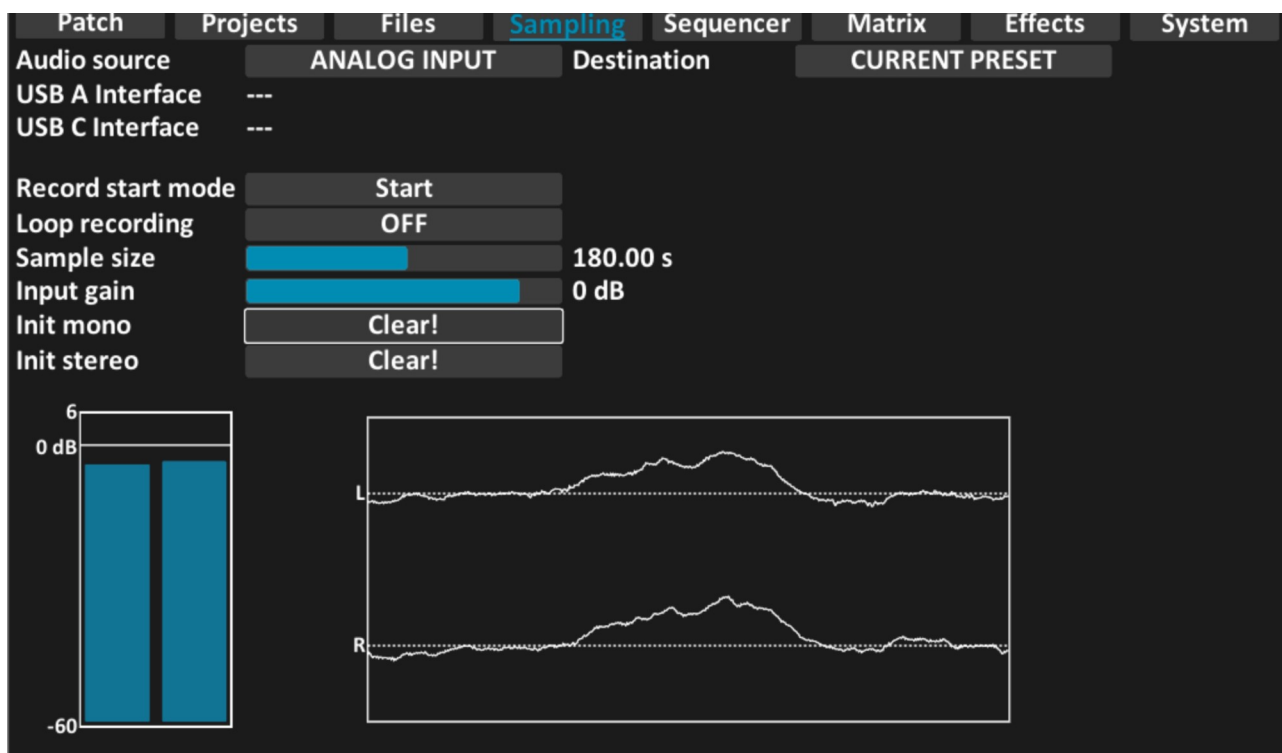
II. Hold down Shift and press delete.

The preset will now initialize to 8 seconds of mono sample memory and defaults like granular mode, 120 BPM 4/4 time signature.

2.B

Alternatively, to have more freedom over your sample buffer, you can go to the Sampling menu, and init the sample there:

- I. Menu → Sampling (Hold [Menu] and Press [4])
- II. Set the sample size
- III. Select “Init Mono” or “Init Stereo”, and press [Enter]
- IV. Press [Menu] to return to the main screen to witness your new and empty sample buffer.



From sample to patch

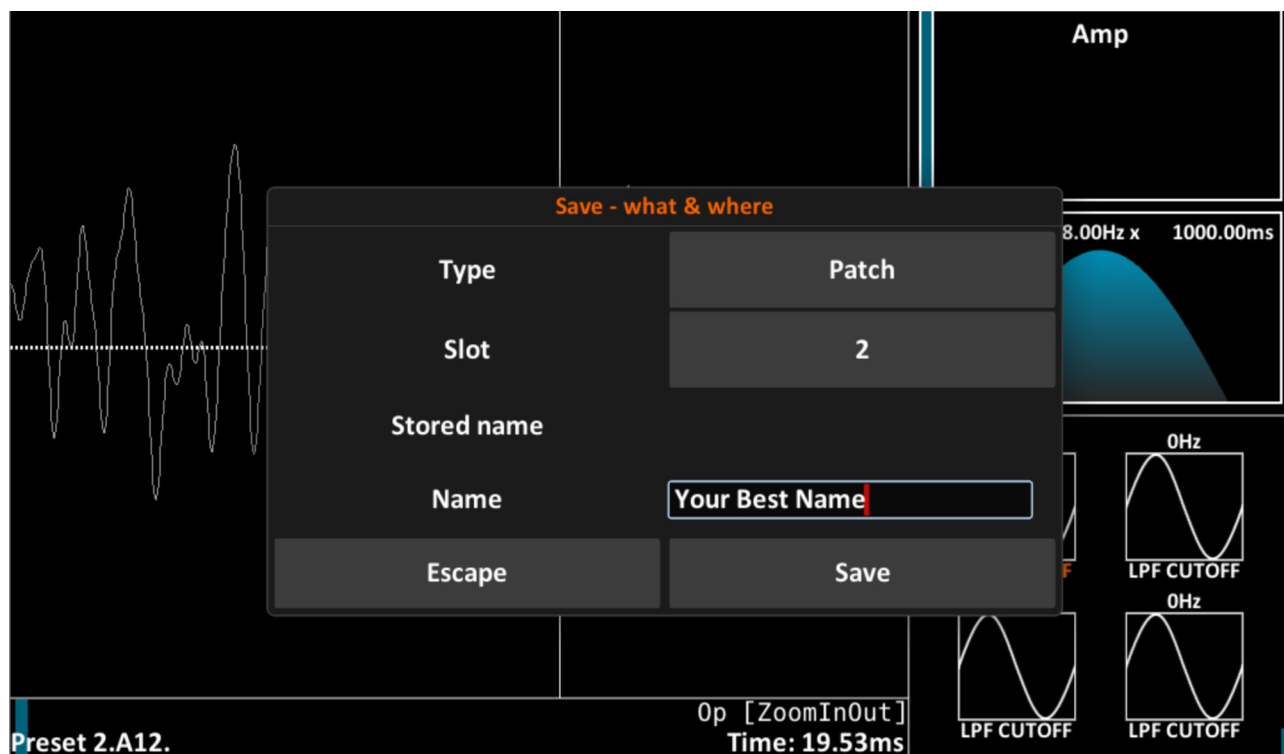
You can now record into the patch or load a sample into it from USB or internal storage.

Samples from internal storage

Let's load a sample from internal storage:

1. Press Load, the file chooser will show.
2. Navigate to `/media/internal/factory/`
Use the arrow buttons to or Op Enc to scroll, then press the Enter button to enter a folder.
3. Scroll to the desired wav file using the arrows or (Op Enc), and press [Load]. See the chapter "Saving & Loading" for more details.
4. Use the horizontal slider and play button to find sweet spots in the sample, and adjust granular parameters to your liking.
5. Press Save, and enter a name using the Enter button, the (Op Enc) and [←] [→] [↑] [↓] arrows. Then press Save again. Your first preset is now saved.

If you would like to record audio instead of loading a sample, have a look at the recording section in Sampling Menu chapter.



Samples from USB

If you want to quickly turn your samples into presets, that can then be recalled, even after power cycling the GR-MEGA:

0. Let's start at preset 1: Press [Bank A], [Sub-bank 1], [Preset 1]
1. Press [Load], the file chooser will show.
2. Navigate to /media/<YOUR USB STICK NAME>
Use the arrow buttons to or (Op Enc) to scroll, then press the Enter button to enter a folder.
3. Scroll to the desired wav file using the arrows or (Op Enc), and press [Load]. See the chapter "Saving & Loading" for more details.
4. Use the horizontal slider and play button to find sweet spots in the sample, and adjust granular parameters to your liking.
5. Press Save, and enter a name using the Enter button, the (Op Enc) and [←] [→] [↑] [↓] arrows. Then press Save again. Your first preset is now saved.
6. Press the next preset (for instance [Preset 2] if you just did Preset 1) and repeat.

Modifying a patch

To modify a patch is easy. Just use the knobs and buttons to change sound parameters.

Let's say you're in granular mode, and you want to reverse grain direction:

1. Use the Direction knob (knob "E" in the lower right section on the front panel), and turn it all the way left.
2. To store the preset, Press [Save] twice.

You've now stored your modified preset. If you skip step 2 and press any preset or bank button, your changes are undone.

Incrementally updating your patch

Using the recipe listed in "Modifying a patch" you can also incrementally modify and save your updated patch to a new preset slot each time.

Now you know how to do this, it's time to introduce copy and paste:

1. Tweak preset.
2. Press [Copy], select type = Patch.
3. Switch to preset [2].
4. Hold [Shift] and press [Copy] to paste the patch to preset slot 2.

5. Press [Save], and [Save] again to save changes.

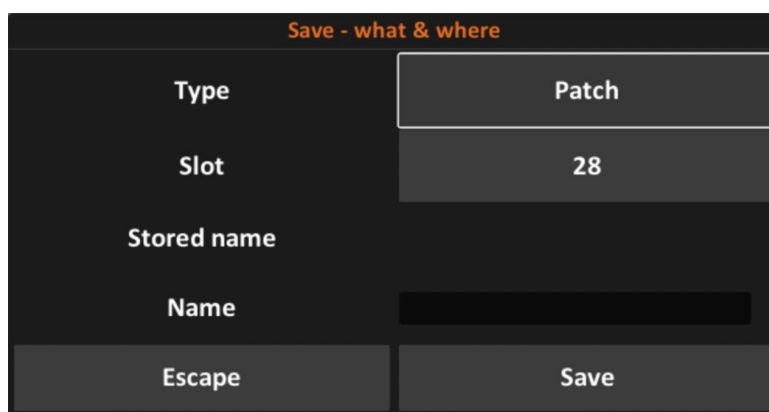
6. Repeat.

You can repeat the above step until you hit your a tweak that you want to discard, say in preset 7. Then you just back track to preset 6, and restart there.

The alternative way, as used in older firmwares <1.6:

If you hold [Shift] and then press [Save] you get the Save dialog.

This will allow you to save to another slot. Select type = Patch, slot = 2, and then Save. Then press preset button [2].



The GR-MEGA as a granular effect

In addition to using the GR-MEGA as a synth, sequencer, or drone machine, it can also be used as a live granular effect. You can also watch the chapter in our video tutorial on Youtube:

<https://www.youtube.com/watch?v=mav7oJWiswA&t=34m06s>

The GR-MEGA has dedicated knobs in the top right of the front panel, exactly for this purpose.



Input level: audio input level

Wet: volume of the granulated and processed signal

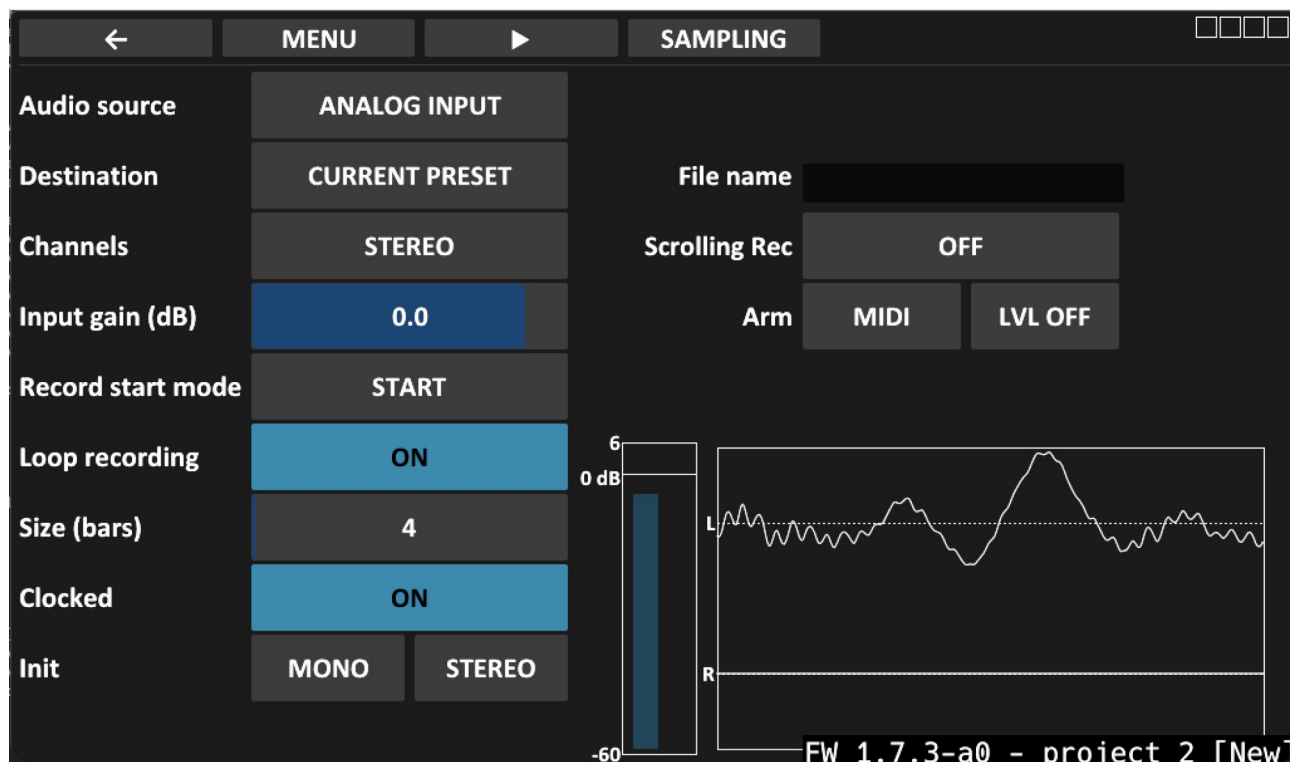
Dry input: volume of the dry audio input signal

Master: master volume

Set these up first. You want to have input level high, but not so high that it starts clipping. Wet and dry should typically be set to the same level.

Then set up the Sampling menu:

1. Hold [Menu] and press [Preset 4]
2. Then set up as in the screenshot:



3. Focus on “Init: STEREO”, and press [Enter] to initialize a looping buffer.

4. Press [Menu] to return to the main screen.

5. Press [Rec], and then press [Play]. The GR-MEGA will now granulate the recording signal.

6. Set (Scan) to 1.0x.

Alternatively, you can toggle “Scrolling Rec” ON before step 4. This is an easier way using it like a granular effect, but you have less freedom: you cannot change the scan rate. You cannot move the play head past the record head. But for a beginner this is better.

Tip: make a template!

Tip: you are not limited to granular. The phase vocoder sound engine also works nicely.

Entering text with built-in buttons

A USB computer keyboard can be plugged in to make entering names super simple, but the built-in controls also do the trick:

Press [Enter] to enter the text field. Press [Enter] again, or press [Escape] to exit the field and resume navigation.

Once you've entered the text field:

* turn (Operator) or press [↑] [↓] buttons to select character (scroll through the alphabet)

Name

[↓]

Lame

[↓]

Kame

[↓]

* Press [←] [→] buttons to scroll the cursor through the name and focus on another character.

This name

[→]

This name

[→]

This name

[→]

This name

* Press [Delete] acts as a back space and will delete the character left of the cursor.

Backup

[Del]

Backu

[Del]

Back

* Press [Execute] (right next to (Operator)) will enter the selected character, and can be used to extend the size of the name.

Letter

[Exec]

Letter

[↑]

Letter a

* Hold [Shift] to change to capitals

caps

[Shift]

Caps

Button combinations

On board controls		
Control	Screen/mode	Function in screen
Display Section		
Position slider	Main	Sample position
[Shift] + Position slider	Main	Scroll through waveform
Position slider	Menus	Set widget value
Position slider	Text box	Scroll through alphabet
(Operator)	Main	Select sample / sound engine operation
(Operator)	Dialogs	Cycle button options & values
(Operator)	File chooser, File manager	Navigate vertically
Shift + (Operator)	Main	Zoom
[Exec]	Main	Execute selected Operation (with the Op Enc)
[Exec]	Text box	Insert space
[Layer 1] .. [Layer 4]	All	Focus on layer
Shift + [Layer 1] .. [Layer 4]	All	Toggle layer on/off
Hold [Layer 1] .. [Layer 4]	All	Toggle layer on/off
[View] + [Layer 1] .. [Layer 4]	All	Randomize sample color
[Shift] [View] + [Layer 1] .. [Layer 4]	All	Reset sample color (back to grey / white)
Navigation & Disk Section		
Escape button	All, except main	Escape to previous naming/saving step or screen
Menu	Main	Enter menu
Menu	Menu	Enter main screen
Menu + preset 1..8	All	Enter menu tab
Menu + [LFO Select]	All	Enter matrix menu
Menu + [Record]	All	Enter sampling menu
Menu + [Seq]	All	Enter sequencer menu
Menu + (FX Select)	All	Enter FX menu
Menu + [Chord],[Sync],[Key Trig]	All	Enter patch menu
Play	All	Toggle play mode
Play, hold 3 seconds	All	Emergency stop: ALL SOUND OFF
Shift + Play	All	Sample audition mode

[Seq]	All	When sequencer is enabled, pressing this button separately will toggle mode for the preset buttons. Blinking = step sequencer. Solid = switch preset.
[Seq] + [Play]	All	Enable / disable sequencer in current layer. NOTE: this used to start/stop the sequencer before firmware 1.6 !
[Enter]	Standing on a button	Use button
[Enter]	Standing on a text box	Start editing text
[Enter]	Editing text	Leave text box
[Enter]	Focused on a file	Load / Save file
Shift + [Enter]	All	Undo
[Load]	All	Open file chooser (for loading)
[Load]	Selecting a file	Load file
[Save]	Main	Open simple save dialog (save changes), or full when expert save dialog is ON.
[Shift] + [Save]	Main	Open full save dialog
[Save]	Save file dialog	Confirm overwrite
[↑]	Main	Fine tune last touched control
[↑]	Menu, dialogs	Navigate up
[↓]	Main	Fine tune last touched control
[↓]	Menu, dialogs	Navigate down
[←]	Main (when zoomed)	Scroll left
[Shift] + [←]	File chooser, file manager	Go to parent folder
[←]	Menu, dialogs	Navigate left
[→]	Main (when zoomed)	Scroll right
[→]	Menu, dialogs	Navigate right
[Feel] (hold button down)	Main	Display control value without changing it
[Copy]	Main	Copy preset to clipboard
Shift + [Copy]	Main	Paste clipboard to current preset
[Copy]	Sequencer	Copy step to clipboard
Shift + [Copy]	Sequencer	Paste step data
[Copy]	Matrix	Copy row to clipboard
Shift + [Copy]	Matrix	Paste row
[Delete]	Text box	Backspace
Shift + [Delete]	Main	Init preset
[Delete]	Projects menu	Initialize project in focus
[Delete]	Files menu	Deletes selected files

[Delete]	Sequencer menu	Initialize/delete cell
Shift + [Delete]	Sequencer menu	Initialize column (step)
Seq + Shift + [Delete]	Sequencer menu	Initialize all steps
[Delete]	Matrix menu	Delete modulation row
Shift + [Delete]	Matrix menu	Delete all modulation rows
[Delete]	Effects menu, focus on fx button	Set selected effect to NONE
Shift + [Delete]	Effects menu	Sets all links in the FX chain to NONE
Preset Section		
Preset 1..8	All, sequencer stopped	Switch preset
Preset 1..8	All, sequencer playing	Jump to sequencer step
Bank A..D	All, sequencer stopped	Switch preset
Bank A..D	All, sequencer Playing	Arm next sequencer bar [1..4]
Sub bank 1..4	All, sequencer stopped	Switch preset
Sub bank 1..4	All, sequencer Playing	Arm next sequencer bar [5..8]
Shift + Preset,(sub)bank	All	Switch to multitimbral preset
Preset,(sub)bank	Sequencer menu, not playing	Set sequencer step, arm sequencer bar
Sequencer Section		
Tap tempo	All	Press four times to set BPM
Shift + Tap Tempo	All	Toggle metronome
BPM knob	All	Set BPM
Shift + BPM knob	All	Fine tune BPM
Rate knob	All	Set sequencer rate division
[Shift] + (Rate)	All	Set sequencer modulation slew (0ms..1000ms)
Position knob	All	Set sequencer position
[Shift] + (Position)	All	Set sequencer transpose
Length knob	All	Set sequence length
Mode knob	All	Set sequencer mode (FWD, REV, etc)
[Shift] + (Mode)	All	Set sequencer drunkenness
Engine “Controls” Section		
Knobs A..H (Rate, grain size, etc)	All	Varies per sound engine. See table in section “sound engine controls”.
[Mode] (Op enc) + [Mode]	All	Cycle sound engine mode: granular, slice, sampler, ..
[View]	All	Change between time series and spectrogram

Shift + [View] (Op enc) + [View]	All	Change side panel: 4 LFO's, mod destinations, CV's, ...
[Sub]	All	Toggle sub-oscillator
[Key Trig] (underneath knobs A..H)	All	Key trigger mode for grains: Off, On, Legato
Shift + [Key Trig]	All	Key trigger mode for scan: Off, On, Legato, Poly
[Sync] (underneath knobs A..H)	All	Grain clock sync: On, Off
Shift + [Sync]	All	Scan clock sync: On, Off
[Chord]	All	Toggle chord mode
Shift + [Chord]	All	Start, stop recording chord notes
(Tilt)	All	Tilt grain window left-right
Shift + (Tilt)	All, PowAR window mode	Set grain window sides (make it pointy or square)
(Curve)	All	Set grain window curvature
Shift + (Curve)	All, Raised cosine window mode	Grain window Amplitude modulation frequency
[Grain Ratio]	All	Cycle grain ratio modes: Free, and "locked" modes DensitySize, DensityRate, ScanRate, ScanOverlap
Shift + [Grain Ratio]	All	Cycle window types: PowAR, Raised Cosine
"Amp" Section		
Amount slider	All	Set envelope amount
[Shift] + Amount slider	Macro Assign UNLIT	Set synthesized audio → recording feedback level.
[Invert]	All	Invert envelope amount
[Invert]	Macro menu	Invert selected macro range
A slider	Pitch, Filt, Amp, or Aux envelope. Curve and Layer Mix are OFF.	Set envelope attack time
A slider	[Curve] button lit	Set envelope attack curve
A slider	[Layer Mix] button lit	Set layer 1 mix volume
Shift + A slider	All	Set envelope attack curve
[Shift] + A slider	[Layer Mix] button lit	Set position in layer 1
D slider	Pitch, Filt, Amp, or Aux envelope. Curve and Layer Mix are OFF.	Set envelope decay time
D slider	[Curve] button lit	Set envelope decay curve
D slider	[Layer Mix] button lit	Set layer 2 mix volume

Shift + D slider	All	Set envelope decay curve
[Shift] + D slider	[Layer Mix] button lit	Set position in layer 2
S slider	Pitch, Filt, Amp, or Aux envelope. Curve and Layer Mix are OFF.	Set envelope sustain level
S slider	[Layer Mix] button lit	Set layer 3 mix volume
[Shift] + S slider	[Layer Mix] button lit	Set position in layer 3
R slider	Pitch, Filt, Amp, or Aux envelope. Curve and Layer Mix are OFF.	Set envelope release time
R slider	[Curve] button lit	Set envelope release curve
R slider	[Layer Mix] button lit	Set layer 4 mix volume
Shift + R slider	All	Set envelope release curve
[Shift] + R slider	[Layer Mix] button lit	Set position in layer 4
Env amount	[Macro Assign] lit	Macro 1 level
A	[Macro Assign] lit	Macro 2 level
D	[Macro Assign] lit	Macro 3 level
S	[Macro Assign] lit	Macro 4 level
R	[Macro Assign] lit	Macro 5 level
Env amount	[Macro Assign] lit	Macro 6 level
A	[Macro Assign] lit	Macro 7 level
D	[Macro Assign] lit	Macro 8 level
S	[Macro Assign] lit	Macro 9 level
R	[Macro Assign] lit	Macro 10 level
[Pitch]	All	Select Pitch envelope
[Filt]	All	Select Filter envelope
[Amp]	All	Select Amplitude envelope
[Aux]	All	Select Auxiliary envelope
[Aux] (hold down) + knob	All	Assign AUX envelope to mod destination
[Macro Assign] (press and release)	All	Vertical sliders now control macro levels.
[Macro Assign] + (Knob)	All	Assign knob to current macro, and determine start,end range by wiggling
[Menu] + [Macro Assign]	All	Macro menu
[Macro Assign] + [↑]	Main	Next macro
[Macro Assign] + [↓]	Main	Previous macro
[Delete] + [Macro assign]	All	Delete current macro
[Macro Assign] + [Invert]	All	Invert range of currently assigned knob.
[ADSR Curve]	All	Allow ADSR sliders to be used for

		setting ADSR stage curves
[Shift] + [ADSR Curve]	All	ADSR sliders now control envelope follower.
[Layer Mix]	All	Allow ADSR sliders to be used as layer mix volumes
[Shift] + [Layer Mix]	All	Allow ADSR sliders to be used as for the “patch spray” feature.
(Patch Volume)	All	Set patch volume
Shift + (Patch Volume)	All	Audio input volume level
(Wet) (top-right “Amp” section)	All	Set volume of granulated audio
Shift + (Wet)	All	Set dry audio volume
Master	All	Master volume
Modulation Section		
(Destination)	All	Set LFO destination
Shift + (Destination)	All	Set MOD source
(Rate)	All	Set LFO rate [0 Hz .. 50 Hz]
(Phase)	All	Set LFO phase
Shift + (Phase)	All	Set LFO amplitude quantization [continuous .. 2 steps]
(Amount)	All	Set LFO amount [-1.0 .. +1.0]
Shift + (Amount)	All	Set MOD amount [-1.0 .. +1.0]
[LFO Select]	All	Cycle through LFO's 1..4
[LFO Select] + (Knob)	All	Assigns knob as mod destination to LFO (or to MOD source), and sets amount by turning said knob
[Sync]	All	LFO Clock sync on/off
[Key Trig]	All	Cycle LFO Key trigger: off, on, legato
[Wave]	All	Cycle LFO wave form
Shift + [Wave]	All	Toggle LFO unipolar - bipolar
Filter Section		
(LP Cutoff)	All	Set Low-pass filter cutoff
Shift + (LP Cutoff)	All	Set Low-pass filter slope (future firmware)
(LP Res)	All	Set Low-pass filter resonance
(HP Res)	All	Set High-pass filter resonance
(HP Cutoff)	All	Set High-pass filter cutoff
Shift + (HP Cutoff)	All	Set High-pass filter slope (future firmware)

FX Section		
(FX Select)	All	Cycle through the FX chain: links 1,2,3,4.
[Shift] + (FX Select)	All	Cycle through FX types for the current link in the chain: select which FX is controlled by the FX1,2,dry,wet knobs.
(FX1)	All	Set FX1 parameter
Shift + (FX1)	All, [Sub] button lit	Sub-osc frequency
(FX2)	All	Set FX2 parameter
Shift + (FX2)	All, [Sub] button lit	Sub-osc amp
(Wet)	All	Set Wet volume of selected FX
Shift + (Wet)	All	Set Dry volume of selected FX

Special button combinations

In the matrix screen you can assign destinations by holding down the [Shift] button, and then turning a knob or moving a fader. An alternative for this is holding down the [LFO Select] button and turning a knob. This also allows knob shift (meaning alternative) functions to be accessed.

Computer keyboard support

Like many some other Tasty Chips products, the GR-MEGA supports using computer keyboard. Hook up your USB computer keyboard, and all of a sudden text entry is much easier. + additionally, a lot of button functions are also accessible this way.

Computer keyboard controls		
Key combo	Screen/mode	Function in screen
<i>Navigation</i>		
Arrows	All	Navigation
Enter	All	[Enter]
Escape	All	[Escape]
Ctrl + M / Cmd + M	All	Toggle menu
<i>Editing</i>		
Backspace	All	[Delete]
Ctrl + I	All	Initialize preset
Ctrl + C / Cmd + C	All	Copy
Ctrl + V / Cmd + V	All	Paste
Ctrl + X / Cmd + X	Menus	Cut
<i>Load & save</i>		
Ctrl + L / Cmd + L	All	Load
Ctrl + S / Cmd + S	All	Save
<i>Play & record</i>		
Alt + P	Main	Play
Shift + P	Main	Audition
Ctrl + P	All	Sequencer play/stop
Ctrl + R	Main	Record
<i>Operator menu</i>		
Ctrl + X / Cmd + X	Main	[Execute] button
Ctrl + O / Cmd + O	All	(Operator) encoder forward, aka next operation
Shift + [Ctrl + O / Cmd + O]	All	(Operator) encoder backward, aka previous operation

<i>Presets</i>		
Ctrl + 12345678	All	Switch preset 12345678
Alt + 1234	All	Toggle layer 1234
Shift + 12345678	All	TBV: Switch to MT preset 12345678
<i>Various</i>		
Alt + V	Main	[View] button
Alt + M	All	[Mode] button

MIDI Command Table

The following table contains all MIDI commands known to the GR-MEGA. This includes all the typical MIDI commands such as note on, note off, pitchbend, aftertouch, program changes, midi beat clock. Sysex is not implemented as the time of writing, but may be added for MTS (MIDI Tuning Standard) to support non equal temperament and non Western tuning.

Precision MIDI: “NRPN”

The GR-MEGA also supports all the CC parameters mentioned below as Non-Registered Parameters Numbers (NRPN). This means you can use the normal 7 bit MIDI values, but also use 14 bit values if necessary. This allows for more than 128 controls, and for control values with 16384 steps instead of the normal 128.

All CC's above number 127 are available as NRPN. We're working to also support these “high range” CC's on MIDI channel 16, in a newer firmware (hopefully 1.1).

All CC's that have range 0-127 (not the toggles, or triggers) are also available as 14 bit precision NRPN's. Since the GR-MEGA has many parameters that demand high precision, like sample position or filter cutoff, this feature exposes the full potential of GR-MEGA to MIDI controllers and sequencers.

Note that the GR-1's large modulation matrix is not fully represented as normal 7 bit CC, but also uses CC's that are only available as NRPN.

An NRPN is just 4 CC packets being sent:

CC header byte (176 + channel), 99, NRPN parameter MSB (upper 7 bit of CC number from above table)

CC header byte (176 + channel), 98, NRPN parameter LSB (lower 7 bit of CC number from above table)

CC header byte (176 + channel), 6, NRPN value MSB (high 7 bit of the 14 bit value)

CC header byte (176 + channel), 38, NRPN value LSB (low 7 bit of the 14 bit value)

For example, let's take parameter 2 (sample position) and set that to sample position 98.76% of the total length (16181 as a 14 bit number). We're using MIDI channel 1 (that's 0 in the header, since we start counting from 0).

176, 99, 0

176, 98, 2

176, 6, $16181 \div 128 = 126$

176, 38, $16181 \bmod 128 = 53$

Generated from `src/midi.rs` enum `Nrpn` (firmware 1.7.2).

CC #	Name (enum)	Description	Range / notes	Curve
<i>Standard MIDI CC (0–127)</i>				
0	BankChange	Bank change	Unused	
1	ModWheel	Mod wheel MSB	0–127. Assignable in mod matrix	linear
2	PitchBendAmp	Pitchbend range	0–48.0 semitones	linear
3	EnaPartNr	Enable & focus layer	0: disable, 1: enable, 2: enable & focus	
4	SubOscFreq	Subosc pitch	Relative sub-osc pitch (64: -1 oct, 32: -2 oct)	linear
5	SubOscAmp	Subosc amp	Sub-oscillator amplitude	linear
6	NrpnValMsb	NRPN value MSB	0–127	
7	Vol	Layer volume	0–127	cubic
8	Pos	Position	Start .. end of sample	linear
9	Dens	Rate or density	Grain rate or density, depending on grain ratio mode	cubic
10	Pan	Panning	0: 100% L, 64: center, 127: 100% R	linear
11	PanSpray	Pan spray	0: no spray, 127: full stereo field	linear
12	Size	Grain size	0.1 ms – 5 s	cubic
13	Spray	Spray	0 – full sample (or FFT block in spectral)	cubic
14	FwdRev	Direction (probability)	0: 100% rev, 64: 50/50, 127: 100% fwd	linear
15	Scan	Scan	0: -2×, 64: stop, 127: +2×	linear
16	Tune	Tune	0: -1 oct, 64: center, 127: +1 oct	2^n
17	MidSide	M-S	0: 100% L, 64: center, 127: 100% R	linear
18	LayerVol	Layer volume (targets layers on the received MIDI channel)	0–127	cubic
19	GrainClockSync	Grain clock sync	0, ≥1	
20	ScanClockSync	Scan clock sync	0, ≥1	
21	GrainKeySync	Grain key sync	0, ≥1	
22	ScanKeySync	Scan key sync	0: OFF, 1: ON, 2: Legato, 3: Poly	
23	NumVoices	Patch polyphony	0–19 (max voices – 1; 0 = mono, 19 = 20 voices)	
24	GlideTime	Glide time	0: 0 ms – 127: 2000 ms	cubic
25	GlideAlways	Glide always	0, ≥1	
26	PitchPerGrain	Pitch per grain	0: same pitch across voice, 1: per-grain pitch	

CC #	Name (enum)	Description	Range / notes	Curve
27	ArpMode	Grain ARP mode	0: up, 1: down, 2: updown, 3: downup, 4: random, 5: shuffle, 6: fwd, 7: rev, 8: fwd-rev, 9: rev-fwd	
28	StartPos	Start pos	0: sample start, 127: sample end	linear
29	StopPos	Stop pos	0: sample start, 127: sample end	linear
30	LoopStart	Loop start	0: sample start, 127: sample end	linear
31	LoopEnd	Loop end	0: sample start, 127: sample end	linear
32	ScanMode	Scan mode	0: looping, 1: oneshot, 2: pingpong	
33	ModWheelLsb	Mod wheel LSB	0–127	
34	SeqBpm	Sequencer BPM	0–127 (14-bit NRPN recommended)	linear
35	SeqRate	Sequencer Rate	0–22 (rate division index; see Rate divisions table)	
36	SeqPos	Sequencer Pos	0–63	
37	SeqLen	Sequencer Length	0–63	
38	NrpnValLsb	NRPN value LSB	0–127	
39	SeqMode	Sequencer Mode	0: Forward, 1: Reverse, 2: Pingpong, 3: Random	
40	RecTriggerLevel	Record trigger level	0: Off, 1–127: –80...0 dB	exp (dB)
41	RecSample	Record sample	Toggle (value ignored)	
42	SamplingDry	Dry audio input volume		cubic
43	SamplingWet	Wet (granulated) volume		cubic
44	Sides	Grain window sides	PowAR only: 0 square, 127 triangular	
45	Tilt	Grain window tilt	0: left, 64: center, 127: right	linear
46	Curve	Grain window curve	0: hollow, 64: linear, 127: bulging/square	linear
47	WindowAm	Grain window AM	Raised-cosine only: AM freq relative to grain size	
48	WindowType	Window type	0: RaisedCosine, 1: PowAR	
49	GranularMode	Granular mode (grain ratio)	0: Free, 1: DensitySize, 2: DensityRate, 3: ScanRate, 4: ScanOverlap	
50	LpCutoff	LPF Cutoff	0 Hz – 20 kHz	cubic
51	LpResonance	LPF Resonance		linear
52	HpCutoff	HPF Cutoff	0 Hz – 20 kHz	cubic
53	HpResonance	HPF Resonance		linear
54	PitchAmt	Pitch env amount	–1.0 ... 0.0 ... +1.0	linear

CC #	Name (enum)	Description	Range / notes	Curve
55	PitchEnvA	Pitch env attack	0 ms – 45 s	cubic
56	PitchEnvD	Pitch env decay	0 ms – 45 s	cubic
57	PitchEnvS	Pitch env sustain		linear
58	PitchEnvR	Pitch env release	0 ms – 45 s	cubic
59	FiltAmt	Filter env amount	–1.0 ... 0.0 ... +1.0	linear
60	FiltEnvA	Filter env attack	0 ms – 45 s	cubic
61	FiltEnvD	Filter env decay	0 ms – 45 s	cubic
62	FiltEnvS	Filter env sustain		linear
63	FiltEnvR	Filter env release	0 ms – 45 s	cubic
64	Sustain	Sustain pedal	<64: OFF, ≥64: ON	
65	AmpAmt	Amp env amount	–1.0 ... 0.0 ... +1.0	linear
66	Attack	Amp env attack	0 ms – 45 s	cubic
67	Decay	Amp env decay	0 ms – 45 s	cubic
68	SustainLevel	Amp env sustain		linear
69	Release	Amp env release	0 ms – 45 s	cubic
70	AuxAmt	Aux env amount	–1.0 ... 0.0 ... +1.0	linear
71	AuxEnvA	Aux env attack	0 ms – 45 s	cubic
72	AuxEnvD	Aux env decay	0 ms – 45 s	cubic
73	AuxEnvS	Aux env sustain		linear
74	MpeTimbreMsb	MPE timbre MSB	0–127	
75	AuxEnvR	Aux env release	0 ms – 45 s	cubic
76	ModListRow	Mod list row	0–49 (row index in mod matrix)	
77	ModListRowEnable	Mod row enable	0: OFF, ≥1: ON	
78	ModListRowSource	Mod source	See Mod sources table	
79	ModListRowCurve	Mod curve	0: low-flat→hollow, 64: linear, 127: high-flat	linear
80	ModListRowAmount	Mod amount		linear
81	ModListRowPolarity	Mod polarity	0: +uni, 1: –uni, 2: +bi, 3: –bi	
82	ModListRowDestination	Mod destination	See Mod destinations table	
83	Cv1Dst	CV1 destination		
84	Glide	Glide / porta	0: 0 ms – 127: 2000 ms	
85	Cv1Amt	CV1 amount		linear
86	Cv2Dst	CV2 destination		
87	Cv2Amt	CV2 amount		linear
88	Lfo1ClockSync	LFO1 clock sync	0: free, 1: MIDI, 2: sequencer	
89	Lfo1Spd	LFO1 frequency	0: stopped – 127: 50 Hz	cubic
90	Lfo1Wv	LFO1 wave	0: sine, 1: tri, 2: saw, 3: –saw, 4:	

CC #	Name (enum)	Description	Range / notes	Curve
			square, 5: random	
91	Lfo1Amt	LFO1 amount	–1.0 ... 0.0 ... +1.0	
92	Lfo1Dst	LFO1 destination		
93	Lfo2ClockSync	LFO2 clock sync	0: free, 1: MIDI, 2: sequencer	
94	Lfo2Spd	LFO2 frequency	0: stopped – 127: 50 Hz	cubic
95	Lfo2Wv	LFO2 wave		
96	Lfo2Amt	LFO2 amount		
97	Lfo2Dst	LFO2 destination		
98	NrpnParLsb	NRPN parameter LSB	0–127	
99	NrpnParMsb	NRPN parameter MSB	0–127	
100	RpnParLsb	RPN parameter LSB	0–127	
101	RpnParMsb	RPN parameter MSB	0–127	
102	Lfo3ClockSync	LFO3 clock sync	0: free, 1: MIDI, 2: sequencer	
103	Lfo3Spd	LFO3 frequency	0: stopped – 127: 50 Hz	cubic
104	Lfo3Wv	LFO3 wave		
105	Lfo3Amt	LFO3 amount		
106	MpeTimbreLsb	MPE timbre LSB	0–127	
107	Lfo3Dst	LFO3 destination		
108	Lfo4ClockSync	LFO4 clock sync	0: free, 1: MIDI, 2: sequencer	
109	Lfo4Spd	LFO4 frequency	0: stopped – 127: 50 Hz	cubic
110	Lfo4Wv	LFO4 wave		
111	Lfo4Amt	LFO4 amount		
112	Lfo4Dst	LFO4 destination		
113	FocusFx	Focus layer FX	0–3 (focus on FX slot in chain)	
114	FxType	Set layer FX type	0: None, 1: Chorus, 2: Comp, 3: Delay, 4: PP Delay, 5: Dist, 6: Flanger, 7: Large Reverb, 8: Reducer, 9: Resonator (MBR), 10: Reverb, 11: Ring Mod, 12: Saturator, 13: Vibrato	
115	FxDry	FX Dry	Dry FX volume	linear
116	FxWet	FX Wet	Wet FX volume	linear
117	Fx1Assign	FX1 knob assign	Depends on effect	
118	Fx1	FX1 value	0–127	
119	Fx2Assign	FX2 knob assign	Depends on effect	
120	AllSoundOff	All sound off	Kills all sound on layer including FX	

CC #	Name (enum)	Description	Range / notes	Curve
			tails	
121	ResetCcs	Reset layer CCs		
122	LocalKeyOff	Local keyboard OFF		
123	AllNotesOff	All notes OFF	Releases all notes on layer (envelopes keep running)	
124	Fx2	FX2 value	0–127	
126	MonoMode	Mono mode		
127	PolyMode	Poly mode		
<i>NRPN-only (> 127)</i>				
128	RecSeq	Sequencer record	0, ≥ 1	
140	ScanPart1	Scan layer 1	0–16383	linear
141	ScanPart2	Scan layer 2	0–16383	linear
142	ScanPart3	Scan layer 3	0–16383	linear
143	ScanPart4	Scan layer 4	0–16383	linear
144	ScanPart5			
145	ScanPart6			
146	ScanPart7			
147	ScanPart8			
148	Part1ControlMap			
149	Part2ControlMap			
150	Part3ControlMap			
151	Part4ControlMap			
152	Part5ControlMap			
153	Part6ControlMap			
154	Part7ControlMap			
155	Part8ControlMap			
156	CurvePitchAttack	Pitch env attack curve	0: low-flat → hollow → 0.5: linear → bulging → high-flat	linear
157	CurvePitchDecay	Pitch env decay curve	same as above	
158	CurvePitchRelease	Pitch env release curve	same as above	
159	InvertPitchEnv	Invert pitch env	0, ≥ 1	
160	PitchLoopMode	Pitch env loop mode		
161	CurveFilterAttack	Filter env attack curve	same curve semantics as pitch curves	

CC #	Name (enum)	Description	Range / notes	Curve
162	CurveFilterDecay	Filter env decay curve		
163	CurveFilterRelease	Filter env release curve		
164	InvertFiltEnv	Invert filter env	0, ≥ 1	
165	FilterLoopMode	Filter env loop mode		
166	CurveAmpAttack	Amp env attack curve	same curve semantics	linear
167	CurveAmpDecay	Amp env decay curve		
168	CurveAmpRelease	Amp env release curve		
169	InvertAmpEnv	Invert amp env	0, ≥ 1	
170	AmpLoopMode	Amp env loop mode		
171	CurveAuxAttack	Aux env attack curve		
172	CurveAuxDecay	Aux env decay curve		
173	CurveAuxRelease	Aux env release curve		
174	InvertAuxEnv	Invert aux env	0, ≥ 1	
175	AuxLoopMode	Aux env loop mode		
176	Part1ChanMap	Part 1 MIDI channel	0–15 (ch 1–16)	
177	Part2ChanMap	Part 2 MIDI channel	0–15	
178	Part3ChanMap	Part 3 MIDI channel	0–15	
179	Part4ChanMap	Part 4 MIDI channel	0–15	
180	Part5ChanMap		0–15	
181	Part6ChanMap		0–15	
182	Part7ChanMap		0–15	
183	Part8ChanMap		0–15	
184	Lfo1KeySync	LFO1 key sync	0, ≥ 1	
185	Lfo2KeySync	LFO2 key sync	0, ≥ 1	
186	Lfo3KeySync	LFO3 key sync	0, ≥ 1	

CC #	Name (enum)	Description	Range / notes	Curve
187	Lfo4KeySync	LFO4 key sync	0, ≥ 1	
188	Lfo1Phase	LFO1 phase	0–16383	
189	Lfo2Phase	LFO2 phase	0–16383	
190	Lfo3Phase	LFO3 phase	0–16383	
191	Lfo4Phase	LFO4 phase	0–16383	
192	Lfo1AmpQuant	LFO1 amp quantization	0–16383	
193	Lfo2AmpQuant	LFO2 amp quantization	0–16383	
194	Lfo3AmpQuant	LFO3 amp quantization	0–16383	
195	Lfo4AmpQuant	LFO4 amp quantization	0–16383	
196	Lfo1Polarity	LFO1 polarity	0: +uni, 1: –uni, 2: +bi, 3: –bi	
197	Lfo2Polarity	LFO2 polarity	0: +uni, 1: –uni, 2: +bi, 3: –bi	
198	Lfo3Polarity	LFO3 polarity	0: +uni, 1: –uni, 2: +bi, 3: –bi	
199	Lfo4Polarity	LFO4 polarity	0: +uni, 1: –uni, 2: +bi, 3: –bi	
200	Part1PatchNum	Layer 1 preset	0–127 (preset 1–128)	
201	Part2PatchNum	Layer 2 preset	0–127	
202	Part3PatchNum	Layer 3 preset	0–127	
203	Part4PatchNum	Layer 4 preset	0–127	
204	Part5PatchNum		0–127	
205	Part6PatchNum		0–127	
206	Part7PatchNum		0–127	
207	Part8PatchNum		0–127	
210	AntiAlias	Anti-alias	0, ≥ 1	
211	TapeSlew	Tape slew	0–16383	linear
217	WinPar3		Window parameter 3	
249	DelayFeedback	Delay feedback	0–16383	linear
253	ReverbTime	Reverb time	0–16383	linear
261	Distortion	Distortion level	0–16383	linear
269	ReducerBit	Reducer bit	0–16383	inv cubic
270	ReducerRate	Reducer rate	0–16383	inv cubic
279	ReverbWidth	Reverb width	0–16383	linear
280	ReverbDampening	Reverb dampening	0–16383	linear
283	TurnXFwd	Navigate right	0–16383	

CC #	Name (enum)	Description	Range / notes	Curve
284	TurnYFwd	Navigate down	0–16383	
285	TurnXBck	Navigate left	0–16383	
286	TurnYBck	Navigate up	0–16383	
289	FiltBypass	Bypass filter	0: active, 1: bypassed	
291	RateMode	Rate mode	0: Free, 1: DensitySize, 2: DensityRate, 3: ScanRate, 4: ScanOverlap	
292	BounceWrapMode	Bounce/wrap mode		
293	FiltRouting	Filter routing	0: LPF only, 1: LPF+HPF, 2: HPF	
294	InputLevel	Input level	0–16383	cubic
<i>Master EQ & per-slot FX</i>				
300	MasterEqB1Freq	Master EQ band 1 freq		
301	MasterEqB1Gain	Master EQ band 1 gain		
302	MasterEqB1Reson	Master EQ band 1 reson		
303	Fx1Par1	FX slot 1 param 1		
304	Fx1Par2	FX slot 1 param 2		
305	Fx1Par3	FX slot 1 param 3		
306	Fx1Par4	FX slot 1 param 4		
307	Fx1Dry	FX slot 1 dry		
308	Fx1Wet	FX slot 1 wet		
309	Fx2Par1	FX slot 2 param 1		
310	Fx2Par2	FX slot 2 param 2		
311	Fx2Par3	FX slot 2 param 3		
312	Fx2Par4	FX slot 2 param 4		
313	Fx2Dry	FX slot 2 dry		
314	Fx2Wet	FX slot 2 wet		
315	Fx3Par1	FX slot 3 param 1		
316	Fx3Par2	FX slot 3 param 2		
317	Fx3Par3	FX slot 3 param 3		
318	Fx3Par4	FX slot 3 param 4		
319	Fx3Dry	FX slot 3 dry		
320	Fx3Wet	FX slot 3 wet		
321	Fx4Par1	FX slot 4 param 1		
322	Fx4Par2	FX slot 4 param 2		

CC #	Name (enum)	Description	Range / notes	Curve
323	Fx4Par3	FX slot 4 param 3		
324	Fx4Par4	FX slot 4 param 4		
325	Fx4Dry	FX slot 4 dry		
326	Fx4Wet	FX slot 4 wet		
327	FftAmpThresh	Spectral amp threshold	Spectral engine knob A	
328	FftLen	FFT size	256, 512, 1024, 2048, 4096, 8192	
329	FftPhaseSmear	Spectral phase smear		
330	FftAmpSmear	Spectral amp smear		
331	FftReducer	FFT reducer	Shift-Pan-Spray in spectral mode	
332	Fx1DryWet	FX slot 1 dry/wet		
333	Fx2DryWet	FX slot 2 dry/wet		
334	Fx3DryWet	FX slot 3 dry/wet		
335	Fx4DryWet	FX slot 4 dry/wet		
336	Part1Vol	Part 1 volume (layer mix)		cubic
337	Part2Vol	Part 2 volume		cubic
338	Part3Vol	Part 3 volume		cubic
339	Part4Vol	Part 4 volume		cubic
340	ModSrcPage1	Mod page 1 source	Mod matrix page 1–4 sources (matrix menu)	
341	ModSrcPage2	Mod page 2 source		
342	ModSrcPage3	Mod page 3 source		
343	ModSrcPage4	Mod page 4 source		
344	ModDstPage1	Mod page 1 destination		
345	ModDstPage2	Mod page 2 destination		
346	ModDstPage3	Mod page 3 destination		
347	ModDstPage4	Mod page 4 destination		
348	MasterEqB1Type	Master EQ band 1 type		
349	MasterEqB1Bypass	Master EQ band 1		

CC #	Name (enum)	Description	Range / notes	Curve
		bypass		
350	MasterEqB2Freq	Master EQ band 2 freq		
351	MasterEqB2Gain	Master EQ band 2 gain		
352	MasterEqB2Reson	Master EQ band 2 reson		
353	MasterEqB2Type	Master EQ band 2 type		
354	MasterEqB2Bypass	Master EQ band 2 bypass		
355	MasterEqB3Freq	Master EQ band 3 freq		
356	MasterEqB3Gain	Master EQ band 3 gain		
357	MasterEqB3Reson	Master EQ band 3 reson		
358	MasterEqB3Type	Master EQ band 3 type		
359	MasterEqB3Bypass	Master EQ band 3 bypass		
360	MasterEqB4Freq	Master EQ band 4 freq		
361	MasterEqB4Gain	Master EQ band 4 gain		
362	MasterEqB4Reson	Master EQ band 4 reson		
363	MasterEqB4Type	Master EQ band 4 type		
364	MasterEqB4Bypass	Master EQ band 4 bypass		
365	MasterEqB5Freq	Master EQ band 5 freq		
366	MasterEqB5Gain	Master EQ band 5 gain		
367	MasterEqB5Reson	Master EQ band 5 reson		
368	MasterEqB5Type	Master EQ band 5 type		
369	MasterEqB5Bypass	Master EQ band 5 bypass		
370	MasterEqBypass	Master EQ bypass		

CC #	Name (enum)	Description	Range / notes	Curve
		(all bands)		
<i>Macros</i>				
371	Macro1	Macro 1 level		
372	Macro2	Macro 2 level		
373	Macro3	Macro 3 level		
374	Macro4	Macro 4 level		
375	Macro5	Macro 5 level		
376	Macro6	Macro 6 level		
377	Macro7	Macro 7 level		
378	Macro8	Macro 8 level		
379	Macro9	Macro 9 level		
380	Macro10	Macro 10 level		
381	Macro11	Macro 11 level		
382	Macro12	Macro 12 level		
383	Macro13	Macro 13 level		
384	Macro14	Macro 14 level		
385	Macro15	Macro 15 level		
386	Macro16	Macro 16 level		
387	Macro17	Macro 17 level		
388	Macro18	Macro 18 level		
389	Macro19	Macro 19 level		
390	Macro20	Macro 20 level		
<i>Misc engine / mod</i>				
391	FilterMode	Filter mode (SVF)	trap-SVF mode enum	
392	FftFreqShift	Spectral frequency shift	Pitch knob in spectral mode	
394	PpDelayFeedback	Ping-pong delay feedback		
395	SprayPolarity	Spray polarity	Bipolar / PosUnipolar / NegUnipolar	
396	RecFeedback	Synth → rec feedback level	Shift + env amount fader	
397	Mod1Amt	Mod-page 1 amount	Front-panel mod amount, page 1	
398	Mod2Amt	Mod-page 2 amount		
399	Mod3Amt	Mod-page 3 amount		
400	Mod4Amt	Mod-page 4		

CC #	Name (enum)	Description	Range / notes	Curve
		amount		
<i>Per-effect parameters</i>				
425	ChorusRate	Chorus rate		
426	ChorusFeedback	Chorus feedback		
427	ChorusCenter	Chorus center		
428	ChorusBandwidth	Chorus bandwidth		
429	ChorusDry	Chorus dry		
430	ChorusWet	Chorus wet		
431	CompThresh	Compressor threshold		
432	CompKnee	Compressor knee		
433	CompRatio	Compressor ratio		
434	CompAttack	Compressor attack		
435	CompRelease	Compressor release		
436	CompDry	Compressor dry		
437	CompWet	Compressor wet		
438	DelayLen	Delay length		
439	DelayAmt	Delay amount		
440	DelayDry	Delay dry		
441	DelayWet	Delay wet		
442	PPDelayLen	Ping-pong delay length		
443	PPDelayAmt	Ping-pong delay amount		
444	PPDelayDry	Ping-pong delay dry		
445	PPDelayWet	Ping-pong delay wet		
446	OverdriveAmt	Overdrive amount		
447	OverdriveDry	Overdrive dry		
448	OverdriveWet	Overdrive wet		
449	FlangerRate	Flanger rate		
450	FlangerFeedback	Flanger feedback		
451	FlangerCenter	Flanger center		
452	FlangerBandwidth	Flanger bandwidth		
453	FlangerDry	Flanger dry		
454	FlangerWet	Flanger wet		

CC #	Name (enum)	Description	Range / notes	Curve
455	LargeReverbTime	Large reverb time		
456	LargeReverbDamp	Large reverb dampening		
457	LargeReverbMS	Large reverb M-S		
458	LargeReverbEarly	Large reverb early		
459	LargeReverbTail	Large reverb tail		
460	LargeReverbPre	Large reverb pre-delay		
461	LargeReverbDry	Large reverb dry		
462	LargeReverbWet	Large reverb wet		
465	ReducerDry	Reducer dry		
466	ReducerWet	Reducer wet		
467	ReverbRoomSize	Reverb room size		
468	ReverbDamping	Reverb damping		
470	ReverbDry	Reverb dry		
471	ReverbWet	Reverb wet		
472	RingModFreqCoarse	Ring mod freq coarse		
473	RingModFreqFine	Ring mod freq fine		
474	RingModDry	Ring mod dry		
475	RingModWet	Ring mod wet		
476	VibratoRate	Vibrato rate		
477	VibratoCenter	Vibrato center		
478	VibratoDry	Vibrato dry		
479	VibratoWet	Vibrato wet		
<i>Audio routing, followers, patch & extra-FX params (incl. Saturator & Resonator/MBR)</i>				
480	AudioInFxSend	Audio-in FX send		
481	SynthFxSend	Synth FX send		
482	InFolAtt	Input follower attack		
483	InFolRel	Input follower release		
484	L1FolAtt	Layer 1 follower attack		
485	L1FolRel	Layer 1 follower release		
486	L2FolAtt	Layer 2 follower attack		
487	L2FolRel	Layer 2 follower		

CC #	Name (enum)	Description	Range / notes	Curve
		release		
488	L3FolAtt	Layer 3 follower attack		
489	L3FolRel	Layer 3 follower release		
490	L4FolAtt	Layer 4 follower attack		
491	L4FolRel	Layer 4 follower release		
492	SaturatorDrive	Saturator drive		cubic
493	SaturatorPostGain	Saturator post gain		linear
494	SaturatorDry	Saturator dry		linear
495	SaturatorWet	Saturator wet		linear
500	PatchBias	Patch bias	Layer bias	linear
501	PatchSpray	Patch spray	Layer spray	linear
502	PatchSprayIntens	Patch spray intensity		
503	SubOsc	Sub-osc enable	0: OFF, ≥1: ON	
504	GrainClockRetrigger	Grain clock retrigger	0: OFF, ≥1: ON	
505	PanSprayDist	Pan spray distribution	0–16383	linear
506	MbrCutoff	Resonator (MBR) cutoff	0–16383	cubic
507	MbrResonance	Resonator resonance	0–16383	
508	MbrDetune	Resonator detune	bipolar (64 = center)	
509	MbrTilt	Resonator tilt	bipolar (64 = center)	
510	MbrDecay	Resonator decay	0–16383	
511	MbrPan	Resonator pan	0: L, 64: center, 127: R	
512	MbrWidth	Resonator stereo width	0–16383	
513	MbrNoise	Resonator noise	0–16383	
514	MbrDry	Resonator dry		linear
515	MbrWet	Resonator wet		linear
516	MbrPitch	Resonator pitch	bipolar (64 = center)	
517	MbrTone	Resonator tone	bipolar (64 = center)	
<i>14-bit synced rate controls (1006–1015)</i>				
1006	Rate	Grain rate	0–16383	cubic

CC #	Name (enum)	Description	Range / notes	Curve
1007	SeqRateDiv	Sequencer clock div	1–128	
1010	Lfo3Mul	LFO3 clock mul	1–128	
1011	Lfo4Mul	LFO4 clock mul	1–128	
1012	Lfo3Div	LFO3 clock div	1–128	
1013	Lfo4Div	LFO4 clock div	1–128	
1014	SeqRateMul	Sequencer clock mul	1–128	
1015	SeqSlew	Sequencer mod slew	0–1000 ms	
<i>Drawing (global / per multi-timbral stack)</i>				
1100	DrawingPlay	Drawing play		
1101	DrawingSpeed	Drawing speed		
1102	DrawingLoopMode	Drawing loop mode		
1103	DrawingTempoSync	Drawing tempo sync		
1104	DrawingSnap	Drawing snap		
1105	Keytrack	Keytrack → LP Cutoff	Bipolar; routes ModSource::KeyTrack → ModDest::Cutoff in the mod matrix	cubic
<i>Explicit free / clock-synced & misc controls (1106–1121)</i>				
1106	ScanFree	Scan, free/unsynced (targets free value directly)	bipolar: 0 = -2×, 64 = stop, 127 = +2×	linear
1107	ScanSynced	Scan, clock-synced (targets synced value directly)	bipolar clock mul/div (64 = stop)	
1108	RateFree	Grain rate, free/unsynced (targets free value directly)	0–16383	cubic
1109	RateSynced	Grain rate, clock-synced (targets synced value directly)	clock mul/div	
1110	Lfo1SpdFree	LFO1 rate, free/unsynced	0: stopped – 127: 50 Hz	cubic
1111	Lfo1SpdSynced	LFO1 rate, clock-synced	clock mul/div	
1112	Lfo2SpdFree	LFO2 rate,	0: stopped – 127: 50 Hz	cubic

CC #	Name (enum)	Description	Range / notes	Curve
		free/unsynced		
1113	Lfo2SpdSynced	LFO2 rate, clock-synced	clock mul/div	
1114	Lfo3SpdFree	LFO3 rate, free/unsynced	0: stopped – 127: 50 Hz	cubic
1115	Lfo3SpdSynced	LFO3 rate, clock-synced	clock mul/div	
1116	Lfo4SpdFree	LFO4 rate, free/unsynced	0: stopped – 127: 50 Hz	cubic
1117	Lfo4SpdSynced	LFO4 rate, clock-synced	clock mul/div	
1118	EngineKnobA	Engine knob A (context: FFT amp thresh / density / grain rate)		
1119	EngineKnobB	Engine knob B (context: FFT size / density / grain size)		
1120	VeloSens	Velocity sensitivity	0–100%	linear
1121	PitchSpray	Pitch spray	0–16383	linear

Rate divisions

Table 3: Rate divisions

Index	Rate	Category
0	1/64	Straight
1	1/32T	Triplet
2	1/32	Straight
3	1/16T	Triplet
4	1/32•	Dotted
5	1/16	Straight
6	1/8T	Triplet
7	1/16•	Dotted
8	1/8	Straight
9	1/4T	Triplet
10	1/8•	Dotted
11	1/4	Straight
12	1/2T	Triplet
13	1/4•	Dotted
14	1/2	Straight
15	1/1T	Triplet
16	1/2•	Dotted
17	1/1	Straight
18	2/1T	Triplet
19	1/1•	Dotted
20	2/1	Straight
21	4/1T	Triplet
22	2/1•	Dotted
23	4/1	Straight
24	8/1T	Triplet
25	4/1•	Dotted
26	8/1	Straight
27	8/1•	Dotted
28	16/1	Straight
29	16/1•	Dotted
30	32/1	Straight
31	32/1•	Dotted
32	64/1	Straight

Mod sources

Table 4: Mod sources

Index	Modulation source
0	LFO1
1	LFO2
2	LFO3
3	LFO4
4	CV1
5	CV2

6	Seq1
7	Seq2
8	Seq3
9	Seq4
10	Mod wheel
11	Key tracking
12	Note on velocity
13	Pitch (pitchwheel, MPE pitch)
14	Aftertouch
15	Timbre (MPE)
16	Lift (note off velocity)
17	AUX envelope
18	Random1
19	Random2
20	Random3
21	Random4
22	Pos X (position fader)
23	Input envelope follower
24	None (= modulation OFF)

Table 5: Modulation destinations

Index	Name	Category
0	PITCH	ENGINE
1	POS	ENGINE
2	SPRAY	ENGINE
3	GRAIN RATE	ENGINE
4	SIZE	ENGINE
5	DENS	ENGINE
6	AMP	ENGINE
7	PAN SPRAY	ENGINE
8	PAN SPRAY DIST	ENGINE
9	PITCH SPRAY	ENGINE
10	SIDES	ENGINE
11	TILT	ENGINE
12	CURVE	ENGINE
13	PAN	ENGINE
14	DIRECTION	ENGINE
15	WINDOW AM	ENGINE
16	SCAN	ENGINE
17	TAPE SLEW	ENGINE
18	SPEC AMPTHR	ENGINE
19	SPEC RDCR	ENGINE
20	SPEC PHSMEAR	ENGINE
21	SPEC AMPSMEAR	ENGINE
22	SPEC FREQSHIFT	ENGINE
23	PITCH ENV AMT	ENV
24	PITCH ATTACK	ENV
25	PITCH DECAY	ENV
26	PITCH SUSTAIN	ENV
27	PITCH RELEASE	ENV

28	FILT ENV AMT	ENV
29	FILT ATTACK	ENV
30	FILT DECAY	ENV
31	FILT SUSTAIN	ENV
32	FILT RELEASE	ENV
33	AMP ATTACK	ENV
34	AMP DECAY	ENV
35	AMP SUSTAIN	ENV
36	AMP RELEASE	ENV
37	AUX ENV AMT	ENV
38	AUX ATTACK	ENV
39	AUX DECAY	ENV
40	AUX SUSTAIN	ENV
41	AUX RELEASE	ENV
42	LPF CUTOFF	FILTER
43	LPF RESO	FILTER
44	HPF CUTOFF	FILTER
45	HPF RESO	FILTER
46	LFO1 RATE	LFO
47	LFO2 RATE	LFO
48	LFO3 RATE	LFO
49	LFO4 RATE	LFO
50	LFO1 AMOUNT	LFO
51	LFO2 AMOUNT	LFO
52	LFO3 AMOUNT	LFO
53	LFO4 AMOUNT	LFO
54	LFO1 PHASE	LFO
55	LFO2 PHASE	LFO
56	LFO3 PHASE	LFO
57	LFO4 PHASE	LFO
58	LFO1 QUANT	LFO
59	LFO2 QUANT	LFO
60	LFO3 QUANT	LFO
61	LFO4 QUANT	LFO
62	SEQ LEN	SEQ
63	FX1	FX
64	FX2	FX
65	AUDIO IN FX SEND	FX
66	SYNTH FX SEND	FX
67	CHOR RATE	FX
68	CHOR FB	FX
69	CHOR CENTR	FX
70	CHOR BW	FX
71	CHORUS DRY	FX
72	CHORUS WET	FX
73	COMP THRESH	FX
74	COMP KNEE	FX
75	COMP RATIO	FX
76	COMP ATTACK	FX
77	COMP RELEASE	FX
78	COMP DRY	FX
79	COMP WET	FX

80	DELAY LEN	FX
81	DELAY AMT	FX
82	DELAY DRY	FX
83	DELAY WET	FX
84	PPDELAY LEN	FX
85	PPDELAY AMT	FX
86	PPDELAY DRY	FX
87	PPDELAY WET	FX
88	OVERDRIVE AMT	FX
89	OVERDRIVE DRY	FX
90	OVERDRIVE WET	FX
91	FLAN RATE	FX
92	FLAN FB	FX
93	FLAN CENTR	FX
94	FLAN BW	FX
95	FLANGER DRY	FX
96	FLANGER WET	FX
97	LVERB TIME	FX
98	LVERB DAMP	FX
99	LVERB M-S	FX
100	LVERB EARLY	FX
101	LVERB TAIL	FX
102	LVERB PRE	FX
103	LVERB DRY	FX
104	LVERB WET	FX
105	REDUCER BIT	FX
106	REDUCER RATE	FX
107	REDUCER DRY	FX
108	REDUCER WET	FX
109	REVERB SIZE	FX
110	REVERB DAMP	FX
111	REVERB WIDTH	FX
112	REVERB DRY	FX
113	REVERB WET	FX
114	RING COARSE	FX
115	RING FINE	FX
116	RING MOD DRY	FX
117	RING MOD WET	FX
118	SAT DRIVE	FX
119	SAT GAIN	FX
120	SAT DRY	FX
121	SAT WET	FX
122	RESO CUTOFF	FX
123	RESO RESO	FX
124	RESO DETUNE	FX
125	RESO TILT	FX
126	RESO DECAY	FX
127	RESO PAN	FX
128	RESO WIDTH	FX
129	RESO NOISE	FX
130	MBR NOISE RATE	FX
131	RESO DRY	FX

132	RESO WET	FX
133	RESO PITCH	FX
134	RESO TONE	FX
135	VIB RATE	FX
136	VIB CENTER	FX
137	VIB DRY	FX
138	VIB WET	FX
139	MACRO1	MACRO
140	MACRO2	MACRO
141	MACRO3	MACRO
142	MACRO4	MACRO
143	MACRO5	MACRO
144	MACRO6	MACRO
145	MACRO7	MACRO
146	MACRO8	MACRO
147	MACRO9	MACRO
148	MACRO10	MACRO

Technical Support

GR-Mega Specifications

Feature	Spec	Remark
General		
Multitimbrality	4 layers	
Polyphony per layer	20 voices	3 in PV engine
Total number of grains	10.000 (5000 on older models)	all layers combined, about 4 times as much as the gr-1
Engines	Sampler	(including loop, start end)
	Granular	
	Tape mode	
	Granular slice mode	Sampler slice mode possible
	Spectral	
Preset system		
Number of presets	128	per project
Multitimbral combinations	128	per project, 16 quickly accessible
Number of projects	50	
Sampling and samples		
Audio input	2 channels (stereo)	
Max sample length	60 minutes	3 minutes max in granular, because of polyphony
Sample rate	48 kHz	
Mix resolution	32 floating point	
Sample channels	mono or stereo	
Granular engine		
Max chord size	12	
Max grains per voice	128	
	Free, Sync-size, Scan & rate	Free means independent rate and grain size, other modes have synchronized rate and size options
Rate modes		
Loop modes	Bounce, wrap, kill	
Arp modes	Up, down, random, shuffle, play order, and more	
Spawn modes	Direct, gradual, recycle	

Phase vocoder

Max polyphony	3
FFT size	256..8192
Chord mode	up to 12 notes per voice

Mod matrix

Number of LFOs	4	4 per layer
Number of modulation sources	24	
Number of modulation destinations	140	and growing
Number of step sequencer modulators	4	

Filters

Filters per voice	LPF and HPF	
Slope	12 dB per octave	Other slopes possible in future firmware

Envelopes

Destinations	Pitch Filter Amplitude Aux	Freely assignable
Length	0.1 ms .. 45 s per stage	
Stages	ADSR	
Shape	Curved: from log to linear to exponential	

FX

Number of simultaneous fx	4	
Effects	Chorus Delays Distortion Dynamics (compressor) Flanger Reducer Reverbs Ring modulator ..and more coming in new firmwares	Plain, and ping pong Overdrive, and reducer Hall and large (algorithmic) With AM mode

Step sequencer

Max chord size	7	
Max steps	64	
Step sequencers per patch	1	In multitimbral mode you'll get up to 4 step sequencers total

Connectivity

Analog audio output	Stereo TRS 1/4 " balanced 110 dB SNR
Analog audio input	Stereo TRS 1/4 " balanced 110 dB SNR
Headphone	1/8 "
MIDI	DIN (in out thru), USB C (in and out)
Eurorack interface	1x gate out, 2x CV in (-5V.. +5V)
LAN (ethernet)	Gigabit (firmware update & filesharing)
Disk / USB sticks	USB A 3.0
Computer keyboard	USB A 2.0
HDMI output (monitor or beamer)	1.2 full size

Storage

Included USB stick	64GB, USB3, up to 200 MB/s	
Internal storage	512GB, 700 MB/s (300 MB/s on older models)	
Dimensions	495x270x95	mm WxDxH, including side panels
Weight	~4 kg	

List of tested (USB-)MIDI controllers and keyboards

Akai MPK25
Alesis Q25
Arturia Beatstep
Arturia Keystep
Korg Nanokontrol2
Korg Nanopad2
Moog Sub37
Roli Seaboard Block
...

List of recommended accessories

Tasty Chips Electronics recommends:

Hardcases:

VidaXL Hardcase 57 x 43 x 22 cm

User recommendations:

Padded soft cover by Custom

<https://www.ebay.com/itm/135425518509>

Power banks:

myVolts Dual Circuit PD Power Bank 65W Black + myVolts Step Up Explorer's Kit

Hardcases:

Panaro cases EK090S

Suitcase (Thomann):

https://www.thomann.nl/thomann_effect_pedal_bag.htm

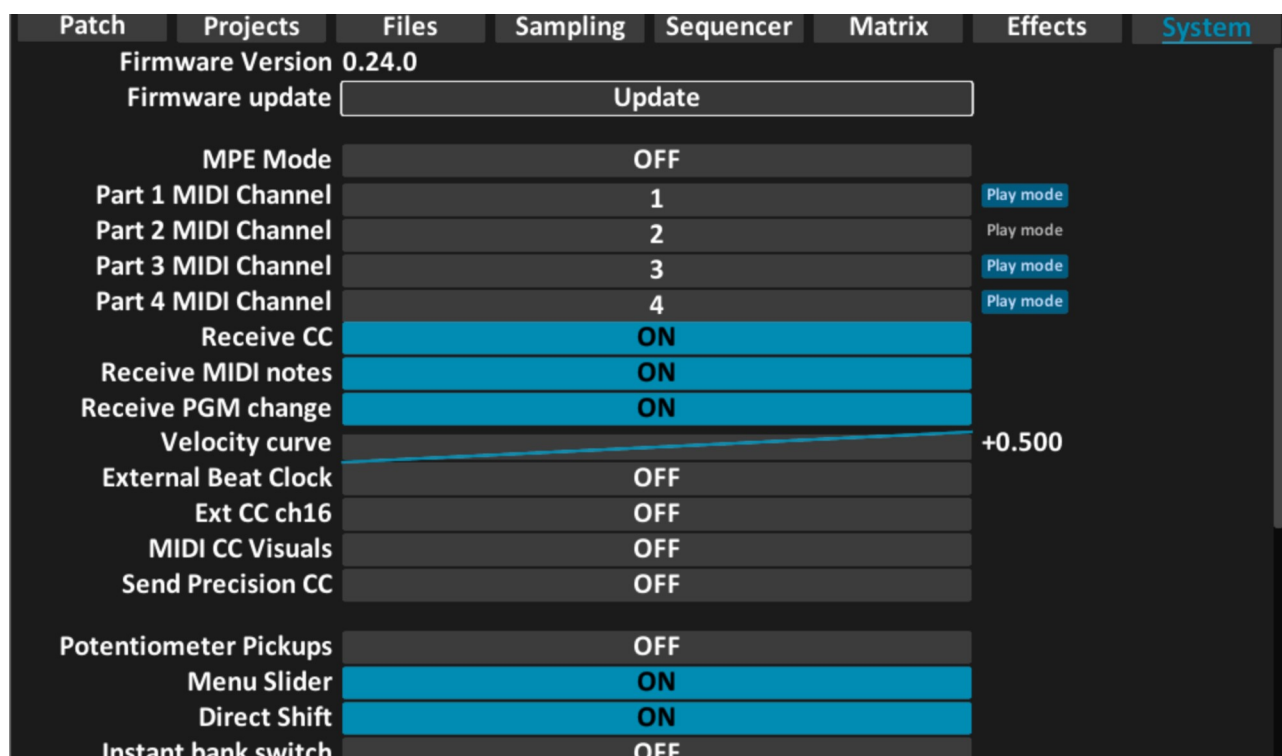
Firmware Updates

We recommend you upgrade to the latest firmware if you're waiting for specific bug fixes. When versions like x.y.0 are released this means new features. When a x.y.1, x.y.2, etc is released this means bug fixes.

Updating the firmware is relatively easy and only involves going into the system menu and pressing one single button. However, the update procedure can take a minute and will reboot your GR-MEGA twice (!)

Firmware upgrades can be done via LAN cable (to your router), or using a firmware zip file on your USB stick. See the troubleshooting section if you're having problems downloading.

DO NOT POWER DOWN YOUR MACHINE WHEN FIRMWARE IS UPDATING. DATA LOSS MAY ENSUE!

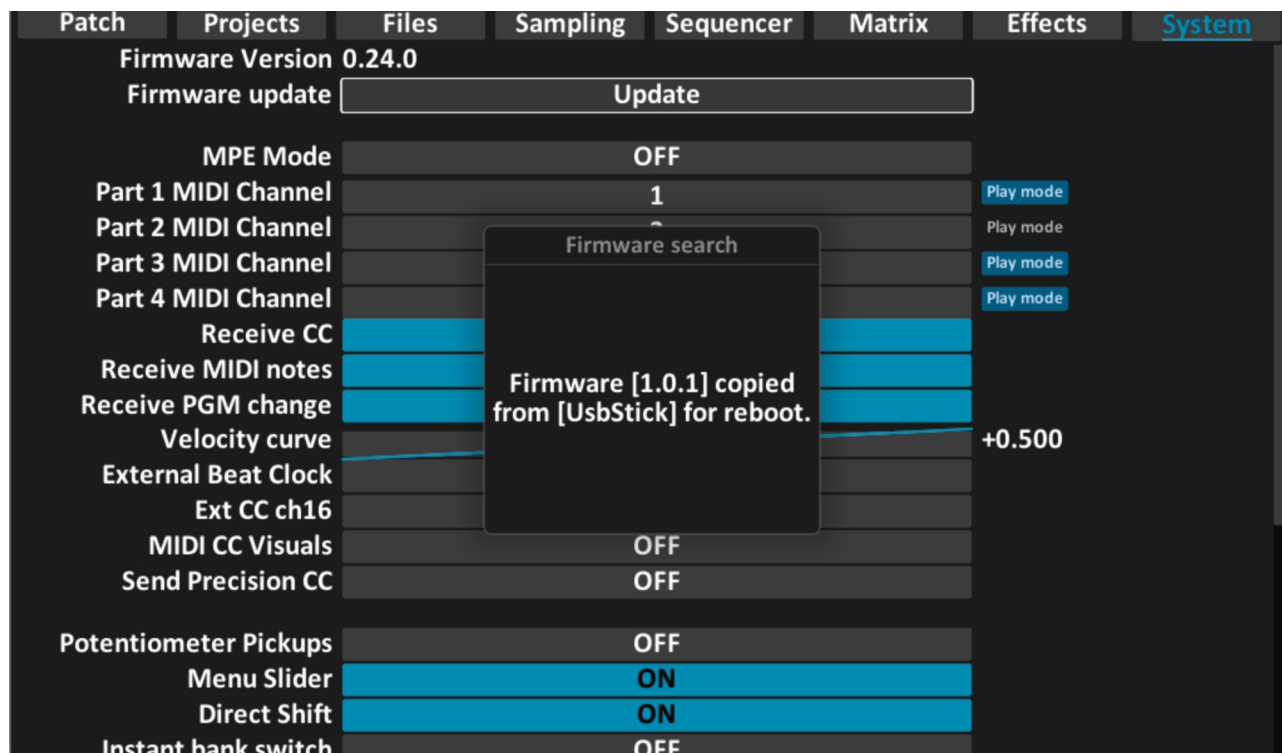


1. Go to the system menu
 - a. Hold [Menu] and press [8]
 - b. Press [Menu]. Navigate right to the System tab and press [Enter]
2. Navigate down with the down arrow to the Update GUI button, then press Enter.

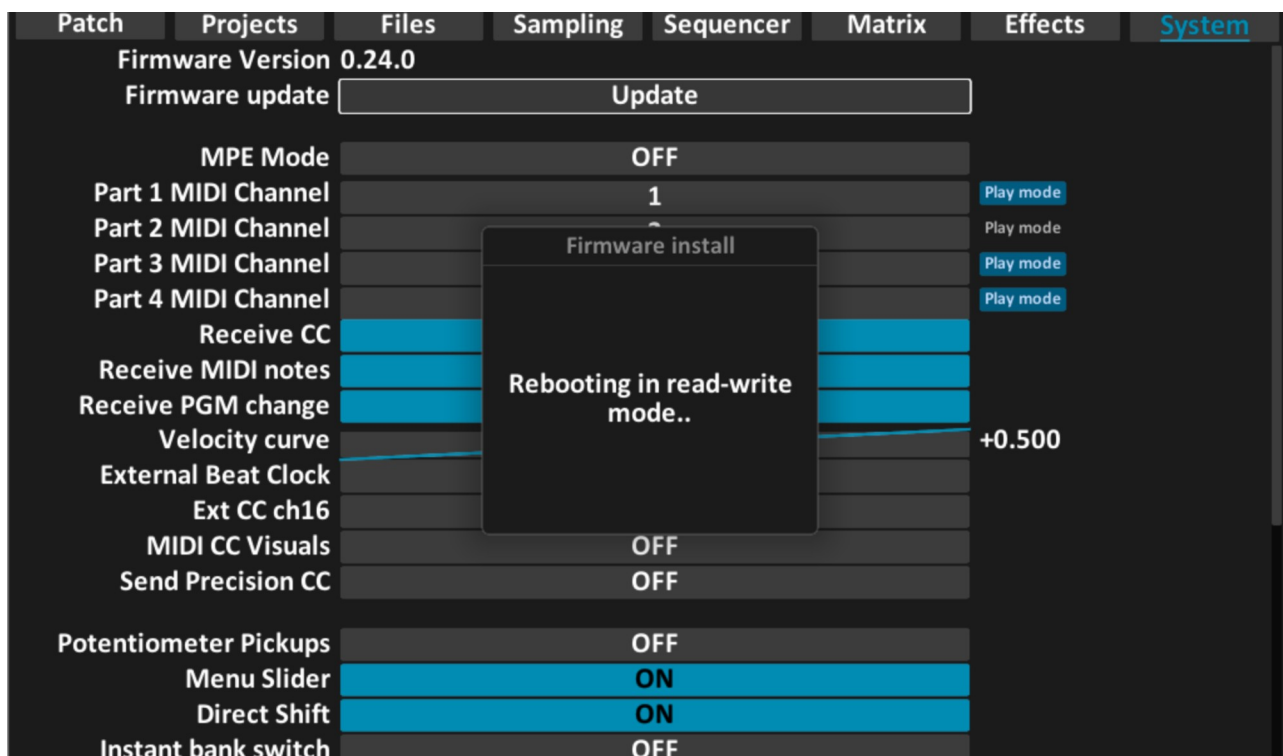
When a LAN cable is connected to your internet router, the GR-MEGA will search for the latest firmware on the Tasty Chips site. If there's no LAN cable, it will look for a firmware zip file on the inserted USB stick. This will take a few seconds.

When the GR-MEGA has found a firmware update, it will report what version and where it found it: Internet, or on USB stick.

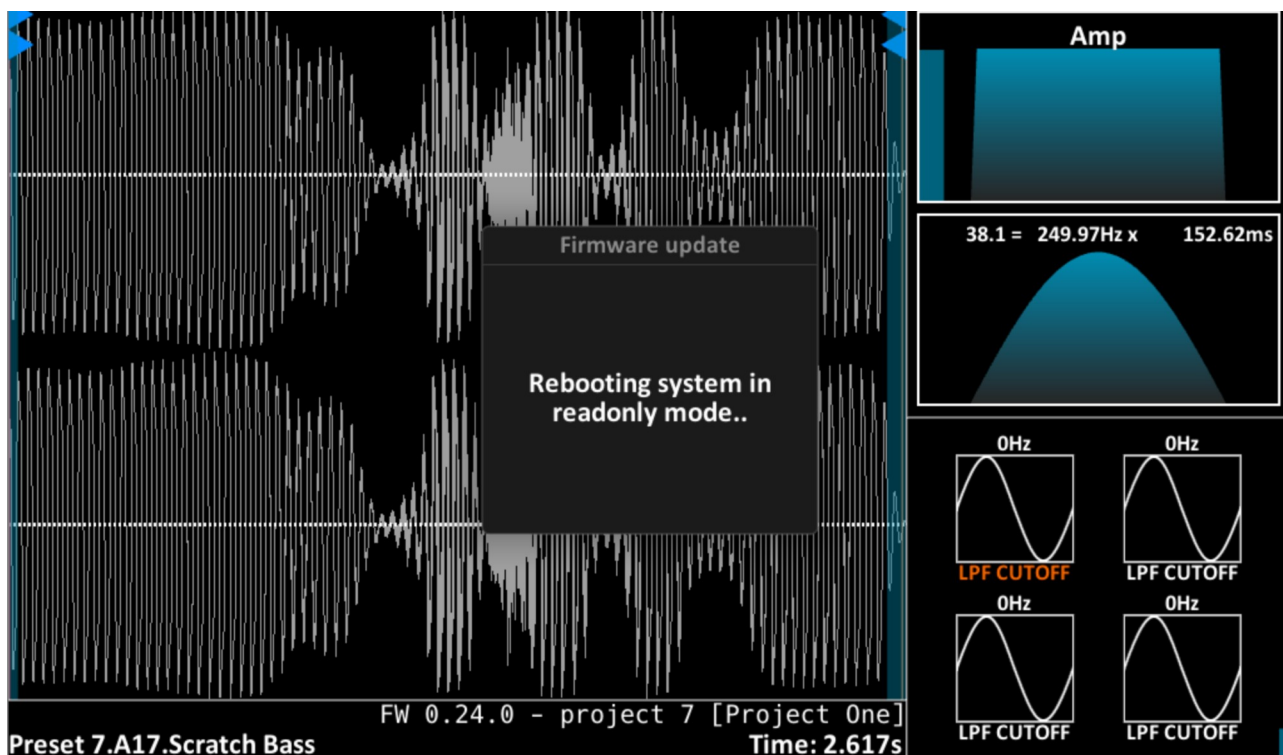
It will then prompt you with up to 4 choices: Escape to cancel, or choose “Online” or “USB”. There can be multiple firmware files on the USB stick, and the GR-MEGA will list at most 2 of them, complete with version number. The online version is always the latest official version. The USB stick can hold any version, even beta versions. The dialog will show the version number for each choice. Assuming you choose Online or USB to upgrade:



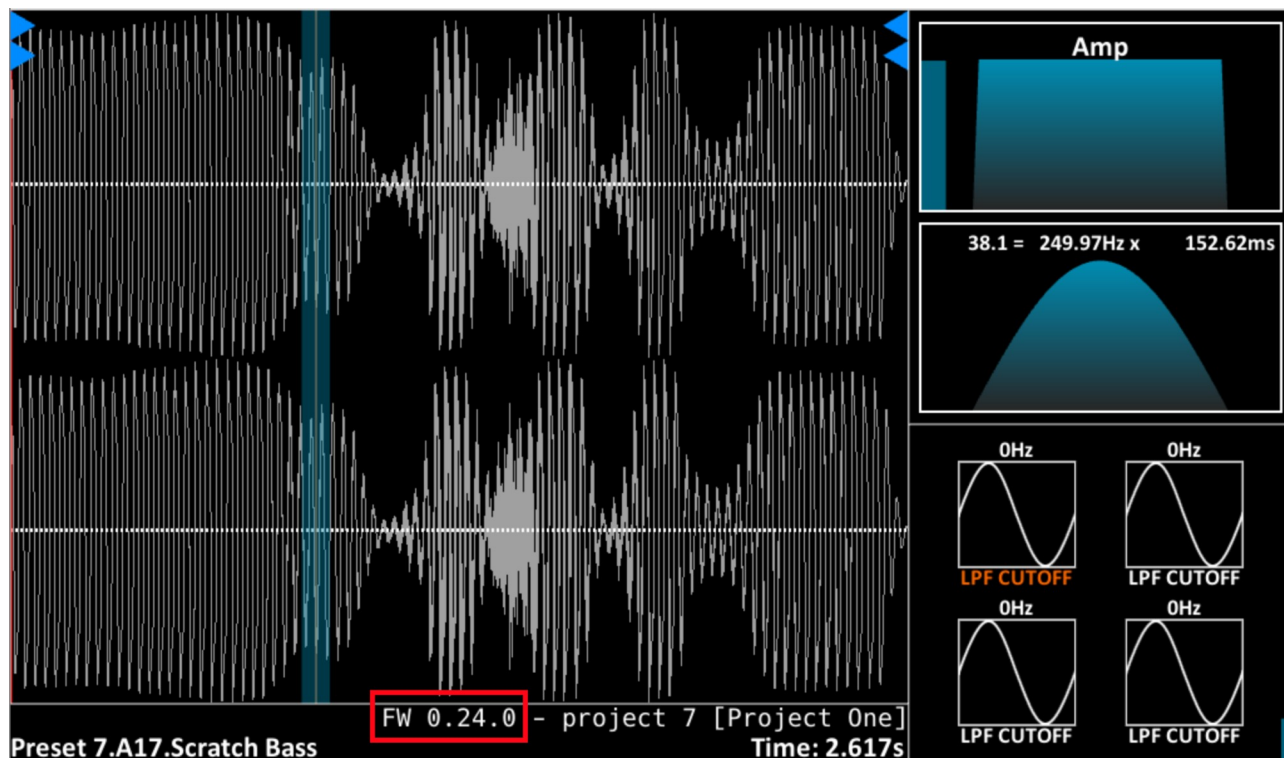
It will then show a popup that it will now reboot. The restart will take about 20 seconds. Then a grey screen will be visible for about 10 seconds until it reboots again.



After this it will start the actual installation. After this is complete, it will show a popup that it will reboot again.



After the second reboot it will show the new firmware version in the bottom of the screen. You've now updated your GR-MEGA's firmware.



Firmware dropbox

When you've set up file sharing between your GR-MEGA and your PC/Mac, you'll see a folder "firmware_dropbox". Copy a firmware zip onto here, and you'll be prompted immediately with a dialog asking you to upgrade to version x.y.z, i.e. the one you just dropped onto it. Confirm and the same procedure as above will start. This effectively means no more LAN connection, and no more plugging USB sticks. Only a USB C connection to your PC/Mac. Of course, it depends on what you prefer. In future firmware we may use such a dropbox, also to try samples from your PC.

FAQ – Frequently Asked Questions

Q: I placed a preorder for the GR-MEGA. When can I expect my unit?

A: Please look up your number in the production time table. It's organized in batches. Your *webshop order number* should be between the start and end number of such a batch.

Q: I placed a preorder for the GR-MEGA. My postal address has changed. Where can I enter this?

A: When your unit is finished, we'll send you an email with a webshop payment link, which also contains a form to enter your current postal address.

Q: I placed a preorder for the GR-MEGA, and did the down payment. When can I pay the rest?

A: When your unit is finished, we'll send you an email with a webshop payment link, which also contains a form to enter your current postal address.

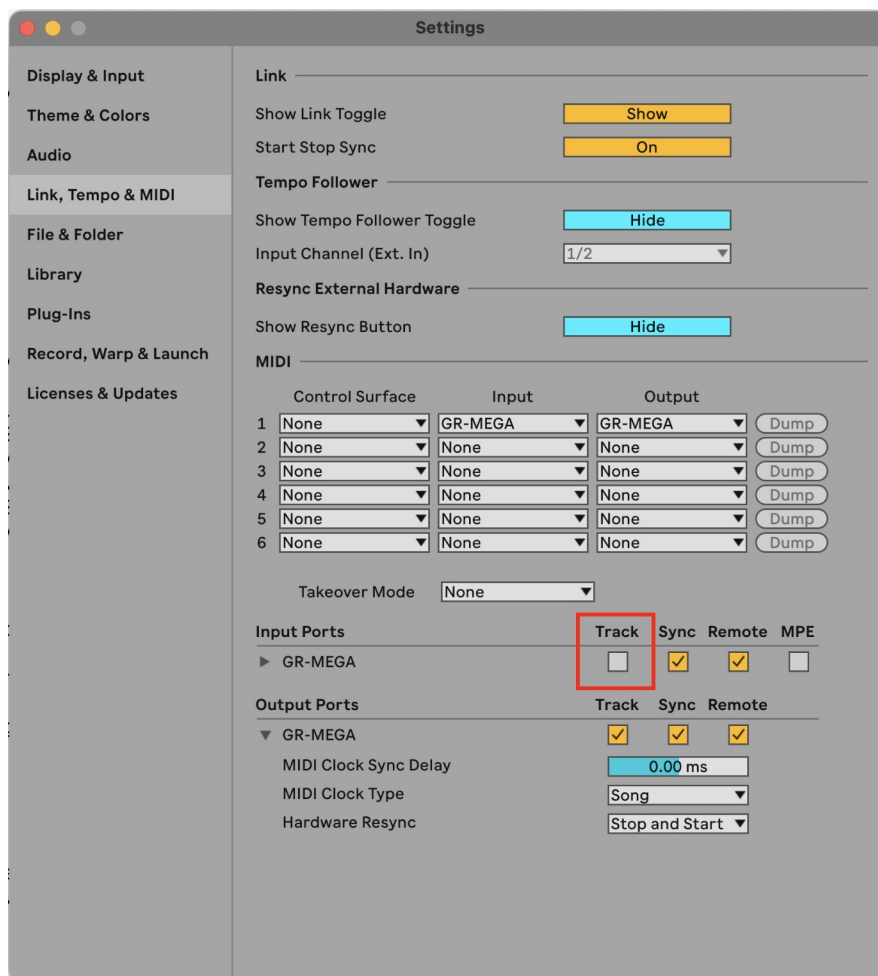
Q: I hooked my GR-MEGA up to my monitors or mixer, but the output volume is really low / there's noise?

A: Please make sure you use **balanced** audio cables (**TRS** – meaning Tip Ring Sleeve, so the phono jack has 2 black rings, not 1!). Also make sure that the knobs in the upper right are dialed all the way up. For audio input on the GR-MEGA, use balanced gear only, or use a DI box.

If you don't have a DI box, or insist on using specific unbalanced gear, we recommend you use the Meanwell GST40A12-P1J power brick.

Q: I'm getting jumps when I turn knobs, and making changes in one layer seems to be reflected in another layer. What's going on?

A: Do you have Ableton connected via USB C? If so, then it defaults to feeding back MIDI data to the source. Please disable this in Ableton's MIDI setup:



..and also make sure that you're using the correct MIDI channels on each GR-MEGA layer. Layers can use the same MIDI channel. System menu → MIDI → MIDI channels

Q: What are the differences between the GR-1 and GR-MEGA?

A: We made this table especially to compare the two: [GR-MEGA and Integral specs](#)

Q: Can the GR-MEGA import my old GR-1 patches?

A: It can do this. From firmware 1.5 it supports seemingly all GR-1 features. The scaling of some modulations do differ, though.

Q: I'm sure my MIDI controller is sending stuff to the MEGA, but it isn't responding?

A: System menu → MPE Mode → OFF

Q: I want a VESA mountable GR-MEGA. Is this possible?

A: We'll consider VESA mounting options is physically possible (the GR-MEGA is quite heavy) and if enough people chime in.

Q: I'm loading this 1 hour long sample and granular mode does nothing. What's up?

A: Granular mode is optimized for shorter samples. Crop the sample down to 5 minutes and 49 seconds and you should be fine.

Q: I'm using a big externally powered USB MIDI keyboard / controller, and unplugging it seems to crash my GR-MEGA??

A: Remove the MIDI controller's power supply. Unplug and replug your GR-MEGA's power to restart it. Only use an external power supply for the MIDI controller if you're using DIN MIDI. If using USB MIDI, please let your GR-MEGA power the MIDI controller! This USB MIDI controller is actually misbehaving and does not conform to the USB spec. A self-powered USB device should not "backpower" a host.

Q: The display seems to have a burned-in menu screen?

A: This is temporary. The display has a memory effect, but it's not permanent. It's an LCD screen, not an OLED. After a minute or two it will disappear.

Q: My display became white?

A: This is the result of unplugging the power or hard power down (holding down the power button for 5 seconds on newer models). The display is not properly shutdown. The whiteness will slowly disappear after a minute.

Q: In multitimbral – when loading a sample into one of the layers, other layers change to this sample as well! What is up?

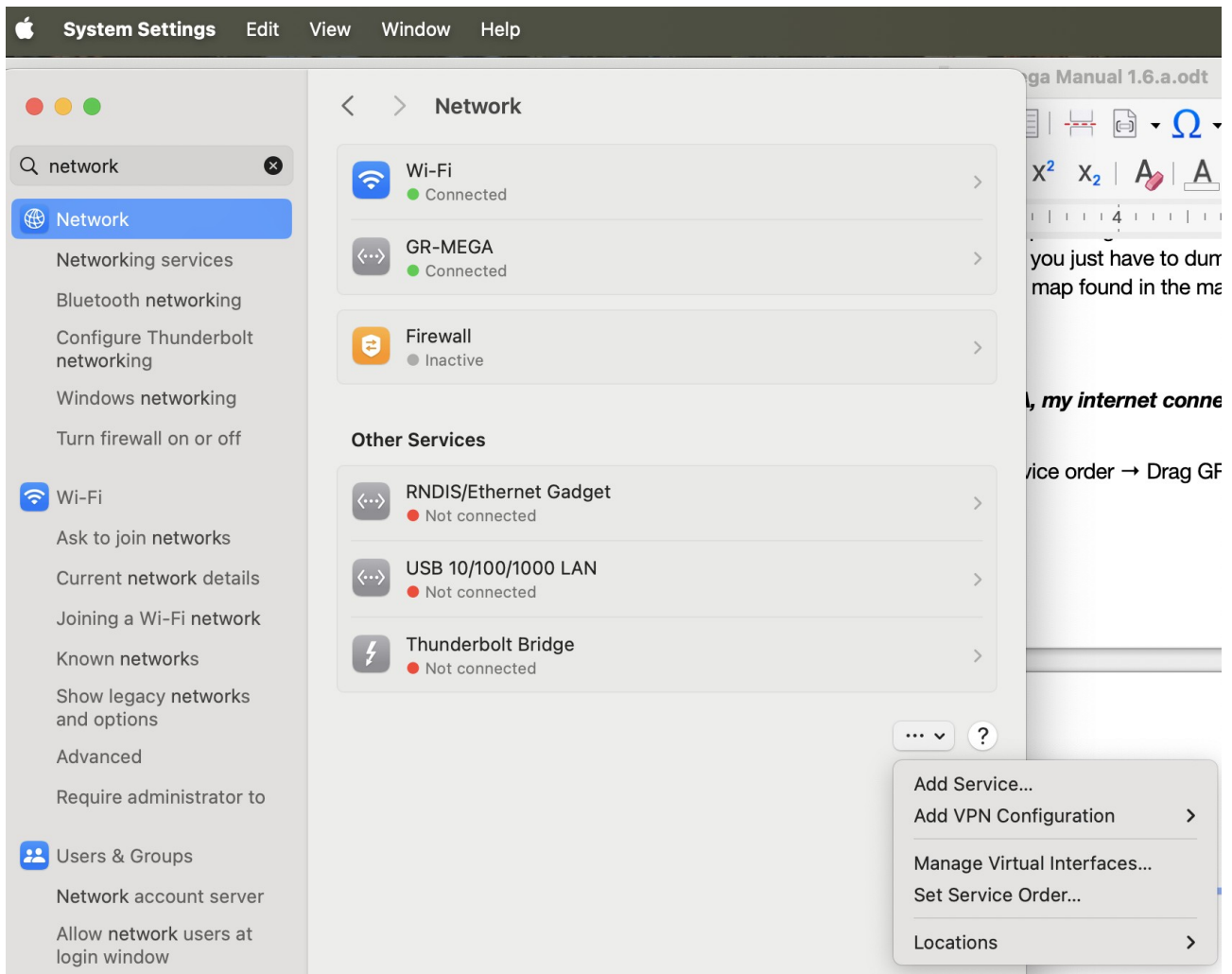
A: In the old GR-MEGA firmware, multitimbral patches, or stacks, are mainly *references* to monotimbral presets. Please upgrade to at least firmware 1.7. From hereon multitimbral presets are *standalone*, and self-contained.

Q: I have MIDI controller X and the GR-MEGA reacts in a strange way. How to fix this?

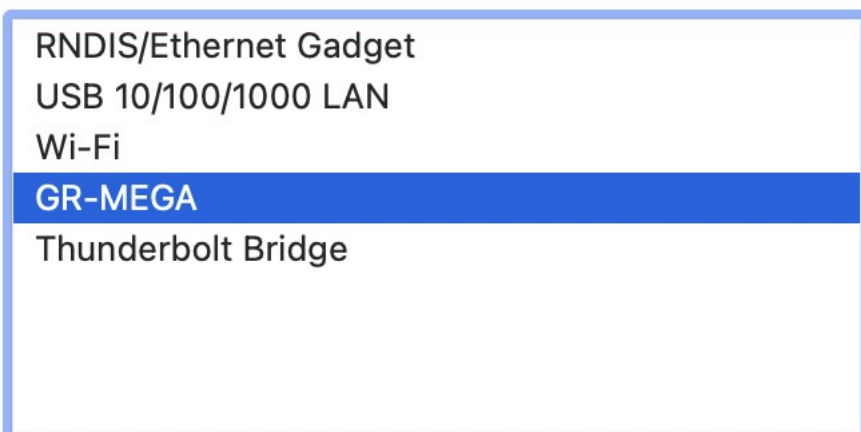
A: It depends a bit on the exact nature of the issue, and also on the popularity of your MIDI controller. The GR-MEGA adheres to the most important general MIDI CC's, but not all. We cannot buy or borrow every MIDI controller out there, so you just have to dump MIDI data from your controller and compare it with the GR-MEGA CC map found in the manual. You can also send your MIDI dump to us so we can analyze.

Q: When hooking up my Mac to the GR-MEGA, my internet connection is lost. How can I fix this?

A: System Settings → Network → ...v → Set service order → Drag GR-MEGA all the way down.



Service Order:



Drag services to change order.



Troubleshooting

Firmware upgrades

Some things to keep in mind when updating your firmware:

- * Please only use the supplied USB stick. There are very cheap, unreliable and slow USB sticks for sale. That's why we supplied a decent one with the GR-MEGA.
- * Place the firmware zip file in the root directory of the USB stick. DO NOT UNZIP IT. On Macs, Safari loves to unzip everything under the sun and even sometimes mangle the output. Use Alt + click to download, or use a different browser.

Crashes

Please report all crashes to us: info@tastychips.nl. Please mention:

- * your GR-MEGA serial number, found on the bottom plate of the casing,
- * your firmware version, found at the top of the system menu,
- * the conditions under which the crash took place.
- * is the crash reproducible, or is it intermittent?
- * if you can find a minimal condition (the least amount of actions to trigger the crash), that is really useful!

Slow USB drive or stick

We've furnished a quality USB stick with the GR-MEGA for your convenience. Please use it. Don't use cheap, or second rate sticks, which can slow down loading and especially saving samples down to a crawl, and may cause corruption as well.

Also note that the GR-MEGA's internal storage is many times more reliable and faster than even a good USB stick. We recommend to only the USB stick for firmware updates and copying files from/to PC/Mac.

Factory reset

This feature is hidden in the system menu. Use the below steps to unhide it, and use it. BEWARE: THIS WILL DESTROY ALL USER DATA, and copy back the factory project to slot 1.

If you have any data at all you want to backup, please use file sharing or the file manager to first copy data from your GR-MEGA to your USB stick or PC! After using factory reset, no user data will be recoverable (!).

1. Go to the system menu:
 - a. Press [Menu] and navigate to the "System" tab, and press [Enter]
 - b. Hold [Menu] and press [Preset 8]

2. Hold [Shift] + [Seq], a button "Factory reset" will now appear.
3. While still holding [Shift] + [Seq], navigate to the factory reset button, and press [Enter] or [Execute].
4. A dialog will appear to ask for confirmation.

Allow Tasty Chips remote access to your GR-MEGA

This feature is hidden in the system menu. It is intended to be used in case you've reported a crash or another serious issue, which we at Tasty Chips Electronics cannot properly reproduce. The idea is that you hook up your GR-MEGA to your internet modem, and then give us access. Then we remotely login to your GR-MEGA, and trace where the crash occurred.

If you've reported such a problem, we may at some point ask you to use this feature. It is accessed as follows:

1. Hook up your GR-MEGA to your internet modem with a LAN (ethernet) cable. The **green** and **amber** LED's on the LAN port should be burning and blinking.
2. Go to the system menu:
 - a. Press [Menu] and navigate to the "System" tab, and press [Enter]
 - b. Hold [Menu] and press [Preset 8]
3. Hold [Shift] + [Seq], a button "Allow remote login" will now appear.
4. While still holding [Shift] + [Seq], navigate to this button, and press [Enter] or [Execute].
5. It will take a while to contact our server, but eventually it should say "Your GR-MEGA can now be contacted!"
6. Remote access will remain enabled until your GR-MEGA is rebooted.

Credits for the GR-MEGA

Development

Concept:	Luc Derks, Pieter van der Meer
Software engineering:	Pieter van der Meer
Electrical engineering:	Joeri Braams, Pieter van der Meer
Prototype code, FX prototypes:	Luc Derks
Hardware prototyping:	Joeri Braams, Mihail Keremedchiev
MCU code:	Joeri Braams, Pieter van der Meer
Mechanical design:	Luc Derks, Pieter van der Meer
Original compressor code:	Niels de Wit
Original (small) reverb code:	“Jezas” (Freeverb)
Original storage hardware design:	Jeroen Bakker
New storage hardware design:	Hasan Akbulak
Testing:	Luc Derks, Joeri Braams, PJ Nyland, Ryder Walsh
Presets and Sound design:	Luc Derks

Special thanks to

Alpha, beta stage feedback:	Lennard Denninger, PJ Nyland
Vocals for presets:	Cezara Maria Gurau

Contact

Web: www.tastychips.nl

Email: info@tastychips.nl

Youtube: <https://www.youtube.com/tastychips>

Facebook: <https://www.facebook.com/tastychipselectronics>

Instagram: https://www.instagram.com/tastychips_synth

Discord: <https://discord.gg/CxuXG34xZA>

