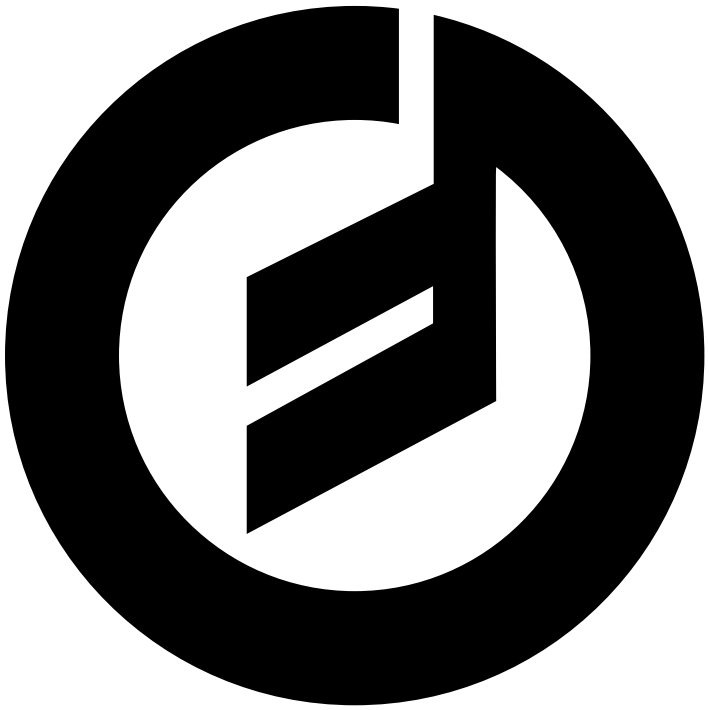
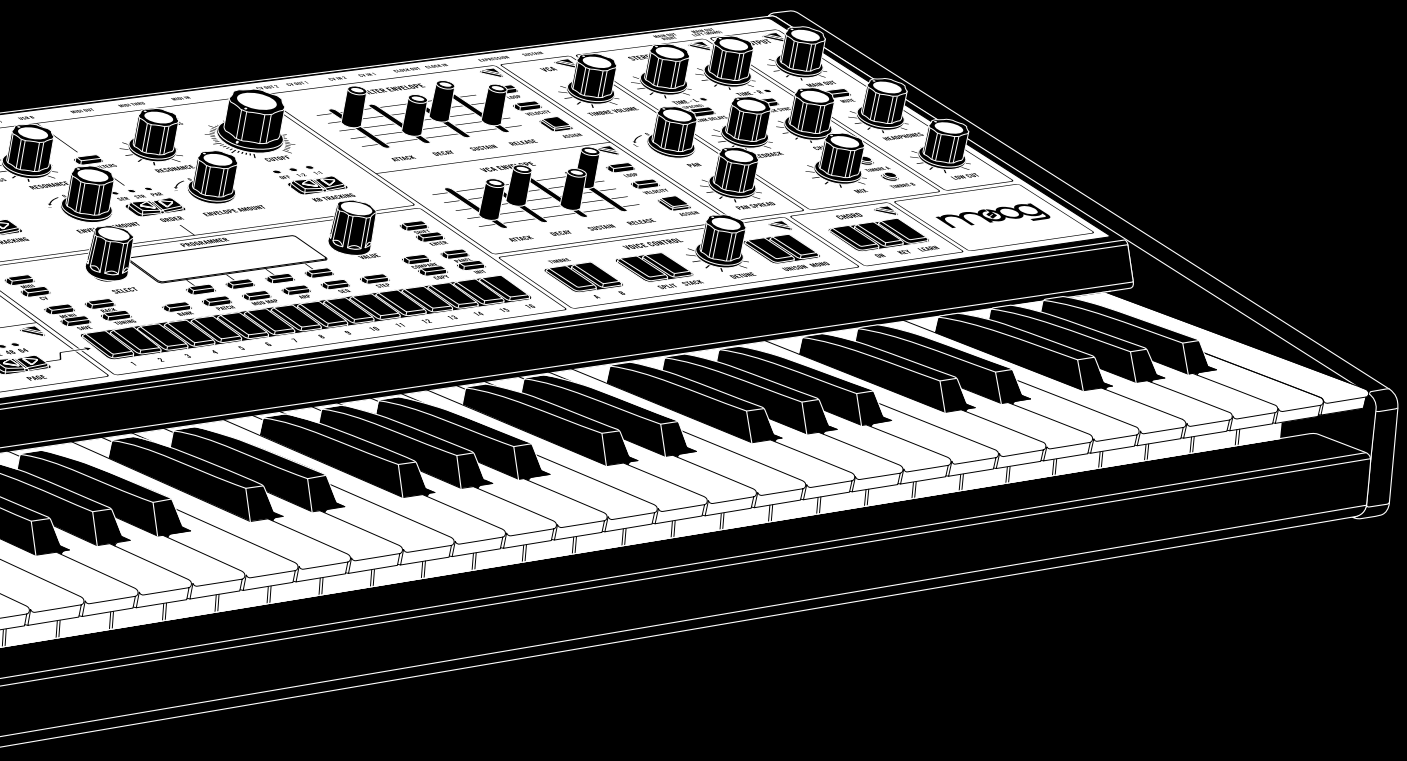


MUSE

USER'S MANUAL


MUSE
HYBRID POLYPHONIC
ANALOG SYNTHESIZER
OSCILLATOR 2
MIXER
ARPEGGIATOR
SEQUENCER
CONTROLLERS
PITCH LFO
GLIDE
PITCH
MOD



“

When you connect with an instrument, whether it’s a guitar or a violin or a set of drums or an electronic instrument, there is an interaction that’s outside of what’s actually going through your finger. There is a connection – I hesitate to use the word “spiritual” – but it has to do with the forces that we know we living things can exert and can respond to.

”

DR. ROBERT MOOG

IMPORTANT SAFETY INSTRUCTIONS

WARNING - WHEN USING ELECTRIC PRODUCTS, THESE BASIC PRECAUTIONS SHOULD ALWAYS BE FOLLOWED:

1. Read all the instructions before using the product.
2. Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool or the like.
3. This product, in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable.
4. The product should be located so that its location does not interfere with its proper ventilation.
5. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat. No naked flame sources (such as candles, lighters, etc.) should be placed near this product.
6. Do not operate in direct sunlight.
7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
8. The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time or during lightning storms.
9. Care should be taken so that objects do not fall, and liquids are not spilled, into the enclosure through openings.

There are no user serviceable parts inside. Refer all servicing to qualified personnel only.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: *Please note that any changes or modifications made to this product not expressly approved by Moog Music could void the user's authority granted by the FCC to operate the equipment.*

MANUAL VERSION

This manual reflects Muse as of firmware **Version 1.4.0**. It is a living document and will be updated as enhancements are made to your instrument.

Register your instrument at moogmusic.com to stay updated with the latest firmware releases, patch libraries, and further exciting content.

Check the version of your Muse by pressing the **MENU** button in the **PROGRAMMER** and scrolling down to **VERSION**.

CONTENTS

UNPACKING AND INSPECTION

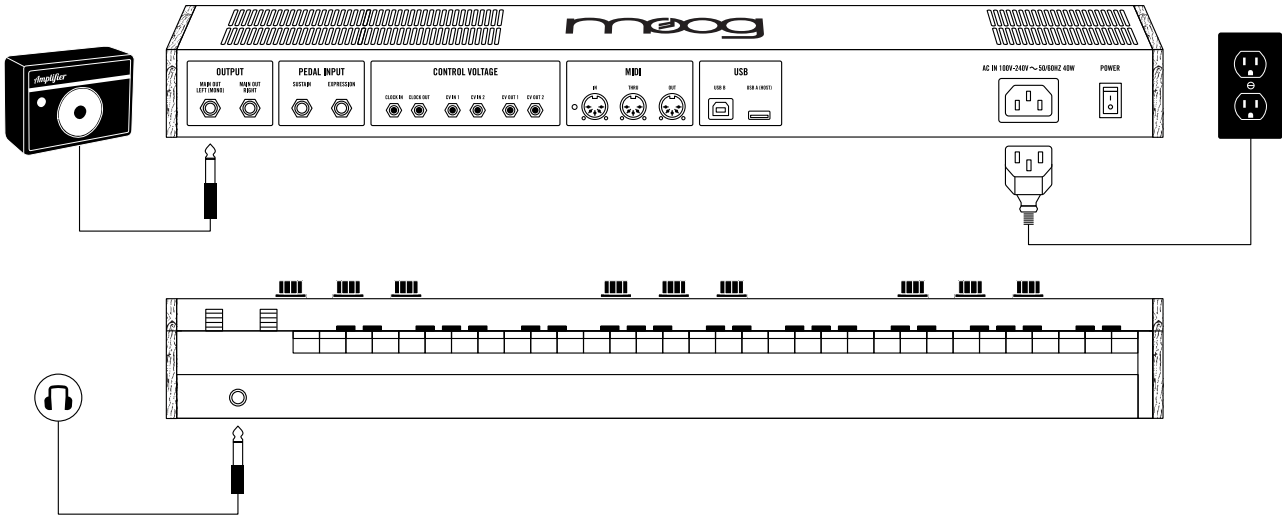
Check the contents of the shipping carton. Be careful when unpacking your new Moog Muse so that nothing is lost or damaged. We recommend saving the carton and all packing materials in case you ever need to ship the instrument for any reason.

Muse ships with the following items:

1. MOOG MUSE 8-Voice Polyphonic Analog Synthesizer
2. IEC Cable
3. Quick Start Guide
4. Registration Card
5. Safety & Warranty Manual

SETUP AND CONNECTIONS

Find somewhere stable and secure to place your new Moog Muse. It weighs 14.55 kilograms (32 lbs) so place it on a table or stand with enough support. Before exploring the Moog Muse we need to provide it with power and hook it up to an audio monitoring system.



POWER

You will first need to connect your Moog Muse to a properly wired AC voltage source. Moog Muse uses an internal power supply that can accommodate AC power sources ranging from 100 to 240 volts and either 50 or 60 cycles (Hz). Power is connected via an IEC power cable.

AUDIO

Turn both the **MAIN OUT** and **HEADPHONES** knobs all the way down.

- **HEADPHONES**
  Connect your headphones with a 1/4" TRS (Tip/Ring/Sleeve) connector to the Headphone jack on the front left of Muse (under the **PITCH** and **MOD** wheels). Slowly increase the **HEADPHONES** knob to a comfortable listening volume.

- **MAINS**
  Connect a 1/4" TRS cable from the **MAIN OUT LEFT (MONO)** jack on the rear of Muse to the left audio input on a mixing console, audio interface, or other amplified speaker system. Connect another 1/4" TRS cable from the **MAIN OUT RIGHT** jack on the rear of Muse to the corresponding right audio input on your system to hear Muse in full, immersive stereo. If necessary, you may use the **MAIN OUT LEFT (MONO)** output for a mono sum of Muse, but it is not recommended. Slowly increase the **MAIN OUT** knob to a comfortable listening volume.

MUSE OVERVIEW

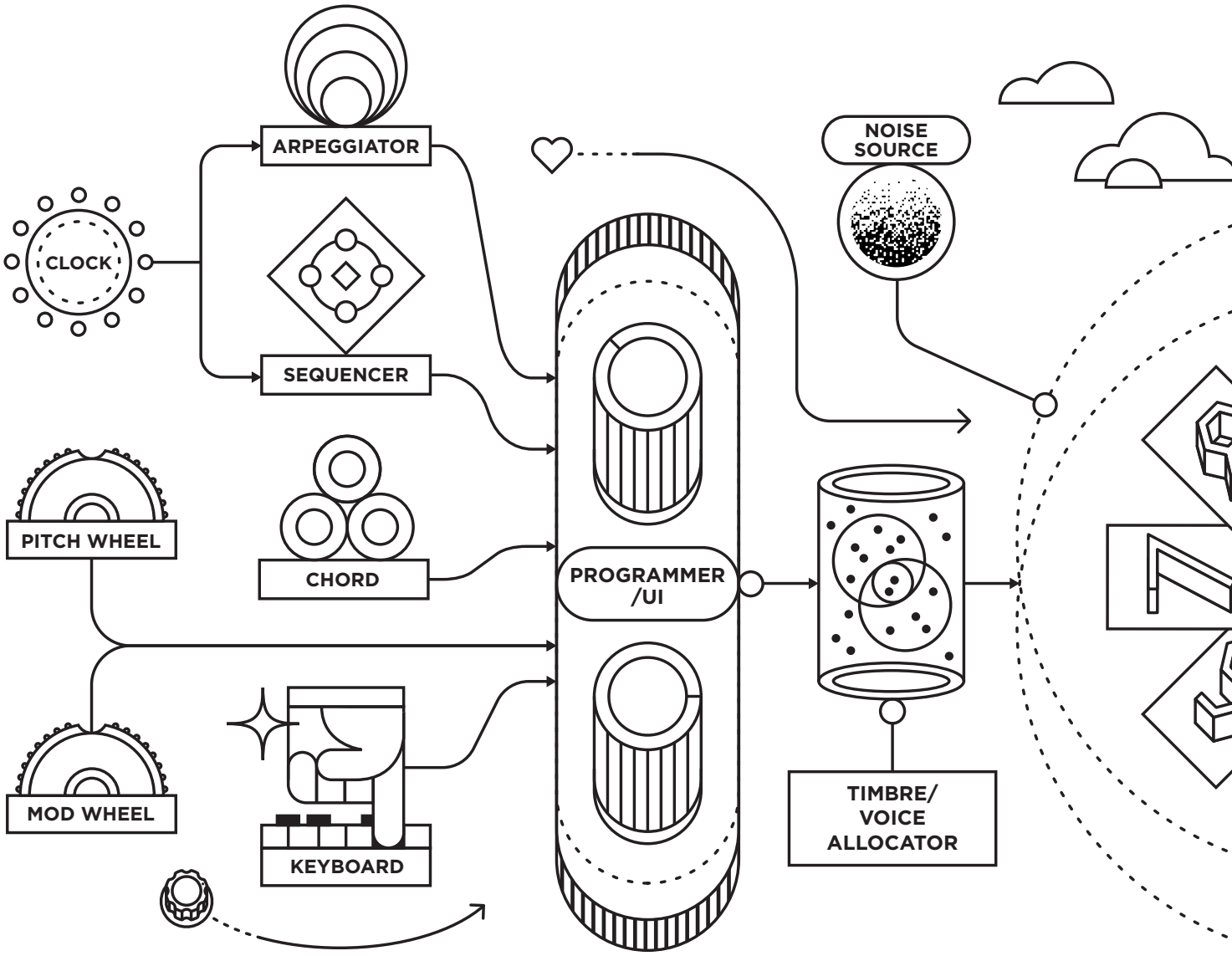
Muse is an innovative eight voice bi-timbral polyphonic synthesizer. Only the fourth polysynth produced by Moog over a period of nearly 5 decades, Muse represents years of engineering and design efforts. Muse is an intuitive yet powerful instrument – intended to be rugged and portable for touring purposes, as well as the center of a modern production studio. With deep analog synthesizer history built into every corner of its voice architecture, Muse utilizes digital control for flexible modular capabilities, patch memory recall, and advanced sequencing. Muse is designed to grow with its user, from the first encounter with its knob-per-function panel and performance controls, through years of deep sound design and exploration.

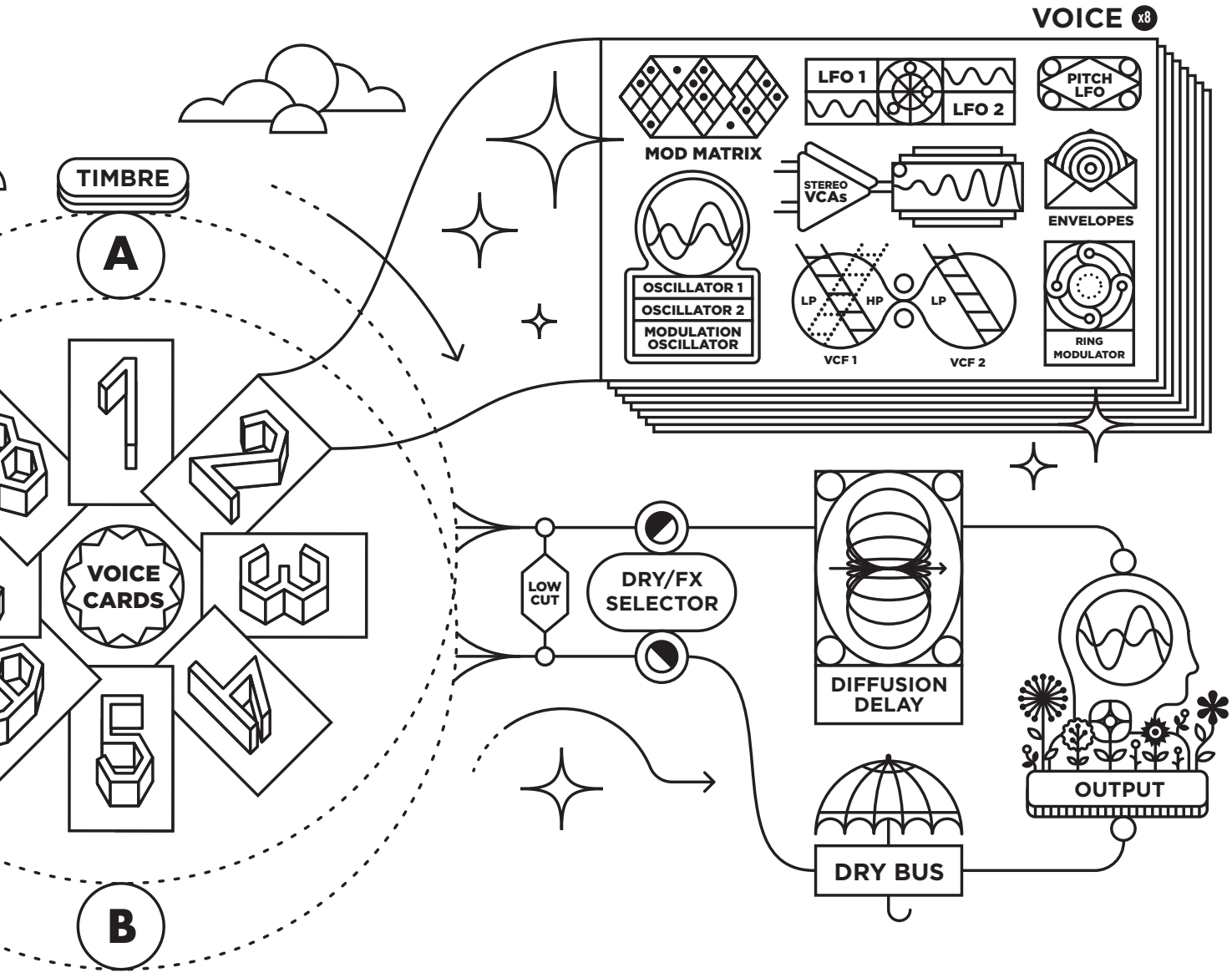
A 61-key semi-weighted Fatar keyboard with velocity and aftertouch, Left Hand Controller, a programmable Macro knob, and two pedal inputs allow for expressive control of Muse. The interactive Programmer lets you store and recall up to 256 patches and sequences while giving you access to countless configuration parameters and performance-oriented customizations for Muse's eighteen modules. Further, each patch is bi-timbral, with two completely independent synthesizer timbres capable of being split across the keyboard, stacked and layered together, and having voices allocated to either timbre via the Voice Control module.

Muse is not only an expressive and colorful analog polyphonic synthesizer but a full compositional workbench. An advanced Arpeggiator lets you program rhythms, configure unique patterns, generate full melodic ideas, and save those arpeggiator configurations for each patch. A complex Sequencer allows you to record sequences of up to 64 steps, allocate each note to either timbre, and save your sequence in a bank of 256 total sequences. Each sequence exists independently of a patch, allowing for on-the-fly patch switching within the same musical idea. Armed with parameter recording, probabilistic functions, and microscopic editing of every single note in the sequence, the Muse sequencer is an endless playground for musical arrangements.

A powerful Modulation Map can store up to sixteen modulation routings per-timbre, thirty-two per-patch – each routing featuring controller scaling and mathematical functions. Two flexible global or per-voice LFOs with customizable waveshapes, a dedicated Pitch LFO, assignable envelopes, and 16 independent per-voice random voltage generators supply a wealth of modulation sources. Comprehensive I/O via both MIDI and control voltage integrate Muse into a studio of any size.

MUSE ARCHITECTURE




VOICE x8
MOD MATRIX
LFO 1
LFO 2
PITCH LFO
STEREO VCAs
ENVELOPES
OSCILLATOR 1
OSCILLATOR 2
MODULATION OSCILLATOR
LP
HP
LP
VCF 1
VCF 2
RING MODULATOR
TIMBRE
A
B
VOICE CARDS
LOW CUT
DRY/FX SELECTOR
DIFFUSION DELAY
OUTPUT
DRY BUS

MUSE OVERVIEW *(Cont.)*

MUSE VOICE ARCHITECTURE

Each of Muse's eight analog voices begins with two Voltage-Controlled Oscillators (**OSCILLATOR 1 + 2**) whose topology is derived from the Minimoog Voyager but which feature unique wave shaping and wave mixing controls and deep programmable analog FM possibilities. A third Voltage-Controlled Oscillator (**MODULATION OSCILLATOR**) can function at audio rate for extra thick sounds or at sub-audio rate for polyphonic modulation via its pre-routed modulation depth panel controls. With a total of 24 analog Voltage-Controlled Oscillators (VCOs), Muse quickly moves from heavy bass tones to delicate polyphonic textures and everywhere in between.

All three analog VCOs are brought together alongside the **RING MOD** of **OSC 1 + 2** (via a ring modulator circuit derived from the Moogerfooger MF-102) and a **NOISE** source in a newly imagined asymmetric clipping **MIXER**. The **MIXER**'s circuit is derived from the Moog CP3 module but allows for a clean mix of all analog sources as well as overall saturation of the mix via the **OVERLOAD** control. That mix is then sent to two Voltage-Controlled **FILTERS** (VCFs) – both are discrete transistor ladder filters based on the legendary Moog 904a filter from the late 1960s. These filters can be routed in different configurations and **FILTER 1** is switchable between lowpass and highpass while **FILTER 2** is a dedicated lowpass filter. Discrete transistor Voltage-Controlled Amplifiers (**VCA**s) based on the Moog 902 module (now in stereo) can distribute each voice in the stereo space.

Each voice contains two variable-curve ADSR **ENVELOPE** generators (one routed to the **FILTERS** and the other routed to the **VCA**) which can be assigned to modulate any parameter on Muse's panel. Muse's three **LFO**s (**LFO 1+2, PITCH LFO**) can be configured to be either global or per-voice and assigned anywhere for deep modulation capabilities. All eight voices are brought together in the **DIFFUSION DELAY** – a mesmerizing vintage-voiced signal processor which can create filtered echoes, diffused tonal smears, or which can be bypassed for a fully analog signal path.

MUSE SOUNDS

Muse ships with a total of 224 bi-timbral patches – each a sound world in and of themselves with plenty to explore. The factory patch library is grouped thematically into 14 banks (banks 15 and 16 are left blank and ready to be filled with your own sounds).

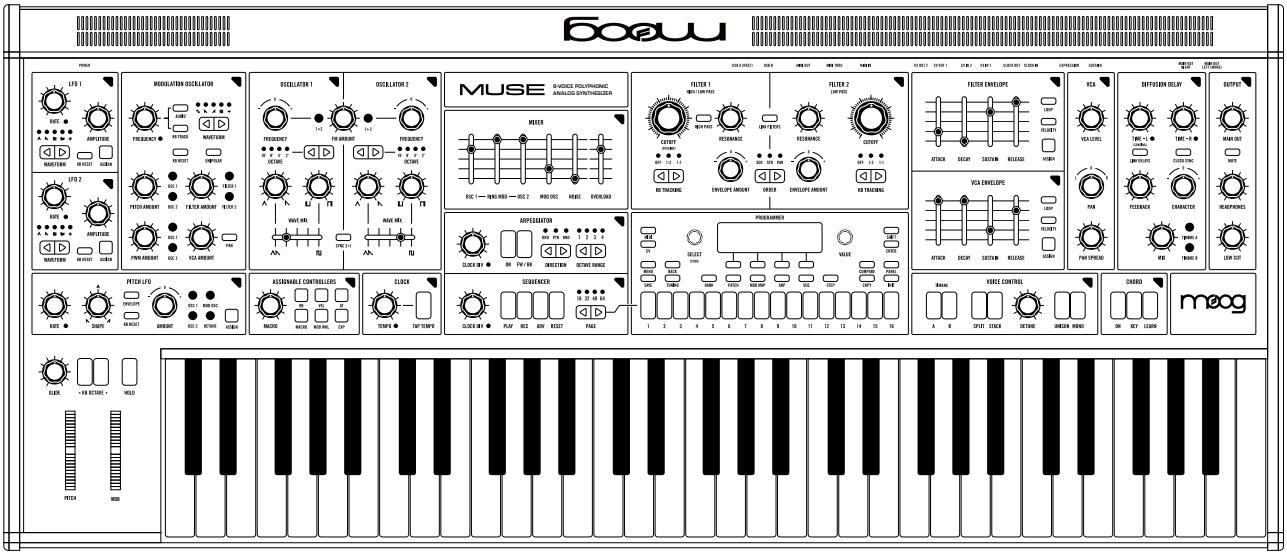
1 - MUSE	**5 - KEYS**	**9 - LEAD**	**13 - CINEMATIC**
2 - CLASSIC	**6 - PLUCK**	**10 - SPLITS (1)**	**14 - ODDITY**
3 - FAST PAD	**7 - METAL**	**11 - SPLITS (2)**	**15 - USER (1)**
4 - SLOW PAD	**8 - BASS**	**12 - ARP**	**16 - USER (2)**

Register Muse online to gain access to additional patch libraries and refer to the **FIRMWARE UPDATES AND LIBRARY MANAGEMENT** section of this manual for details on importing and exporting patches from Muse.

MUSE SOUND DESIGNERS:
Eric Frampton, Danny Wolfers, Drew Schlesinger, Jexus, Cloudface, Manny Fernandez, Lisa Bella Donna, Max Ravitz, Erik Norlander, Steve Dunnington, Stephen Petoniak, Kevin Carballo, Chris Miller

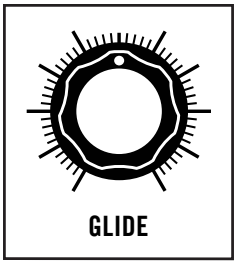
PLAYING MUSE

Muse is an expressive instrument designed for players and sound explorers alike. Its front panel gives access to all parameters of its powerful synthesis engine, while its 61-key keyboard with velocity and aftertouch, Left-Hand Controller with Pitch and Mod wheels, and programmable **MACRO** knob all provide for deep and dynamic playability and control. Let's explore how to play Muse, how to load sounds, and the basics of how to create and save sounds.



KEYBOARD AND LEFT-HAND CONTROLLER

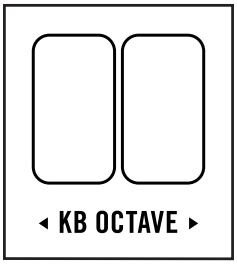
The main interface for Muse is its keyboard. Keyboard tracking, velocity, and aftertouch can be routed as modulation sources via the **ASSIGNABLE CONTROLLERS** module. Located to the left of the Keyboard is the Left-Hand Controller, providing further expressive and performance controls.



GLIDE
Increasing the **GLIDE** control will increase the amount of time it takes to move from one note to the next, creating a portamento effect.

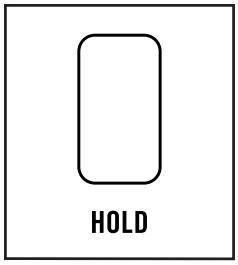
TIP: GLIDE *can be turned* ***ON*** *or* ***OFF*** *individually for* ***OSCILLATOR 1, OSCILLATOR 2****, and the* ***MODULATION OSCILLATOR*** *via their respective* ***MORE*** *menus.*

TIP: *Deeper configuration options for* ***GLIDE*** *are available via the* ***ASSIGNABLE CONTROLLERS MORE*** *menu.*

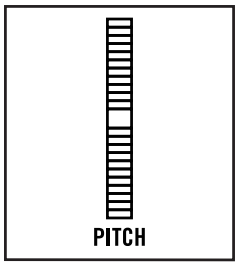


KB OCTAVE
Shifts the octave of the keyboard down (< button illuminated) or up (> button illuminated). In the default octave range neither button will be illuminated.

PLAYING MUSE *(Cont.)*

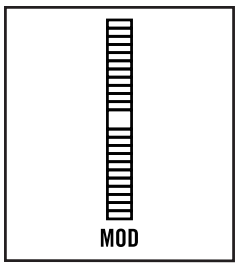


HOLD
The **HOLD** button behaves in much the same way as a sustain pedal, but with a few important differences. When the **HOLD** button is **ON** (illuminated) notes being held when the button was pressed will continue to sound. If new notes are added in a legato style – that is, they are played while other notes are still held – these new notes will be added to the current stack of held notes. If new notes are added in a non-legato fashion (where all of the notes have been released before the new notes are played) the previous notes will stop sounding and the new notes will take their place. The **HOLD** button also acts as a latch for the Arpeggiator.

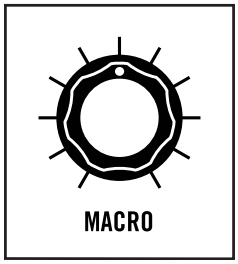


PITCH
The spring-loaded **PITCH** wheel is used to bend the pitch of **OSCILLATORS 1 + 2** and the **MODULATION OSCILLATOR** (when **KB TRACK** is **ON**) up or down by a predetermined amount. The **PITCH** wheel additionally affects the keyboard modulation source in the **MOD MAP** as well as filter **KB** tracking. Pitch bend defaults to +/- 7 Semitones.

*TIP: Pitch wheel range can be set via the MORE menu in the **ASSIGNABLE CONTROLLERS** module.*



MOD
The **MOD**ulation wheel is a performance control that is typically used to control the amount of modulation in a patch – scaling the modulation depth from a particular source to a particular destination. The **MOD** wheel can be freely assigned as both modulation source and modulation controller via the **ASSIGNABLE CONTROLLERS** section and the **MOD MAP.**



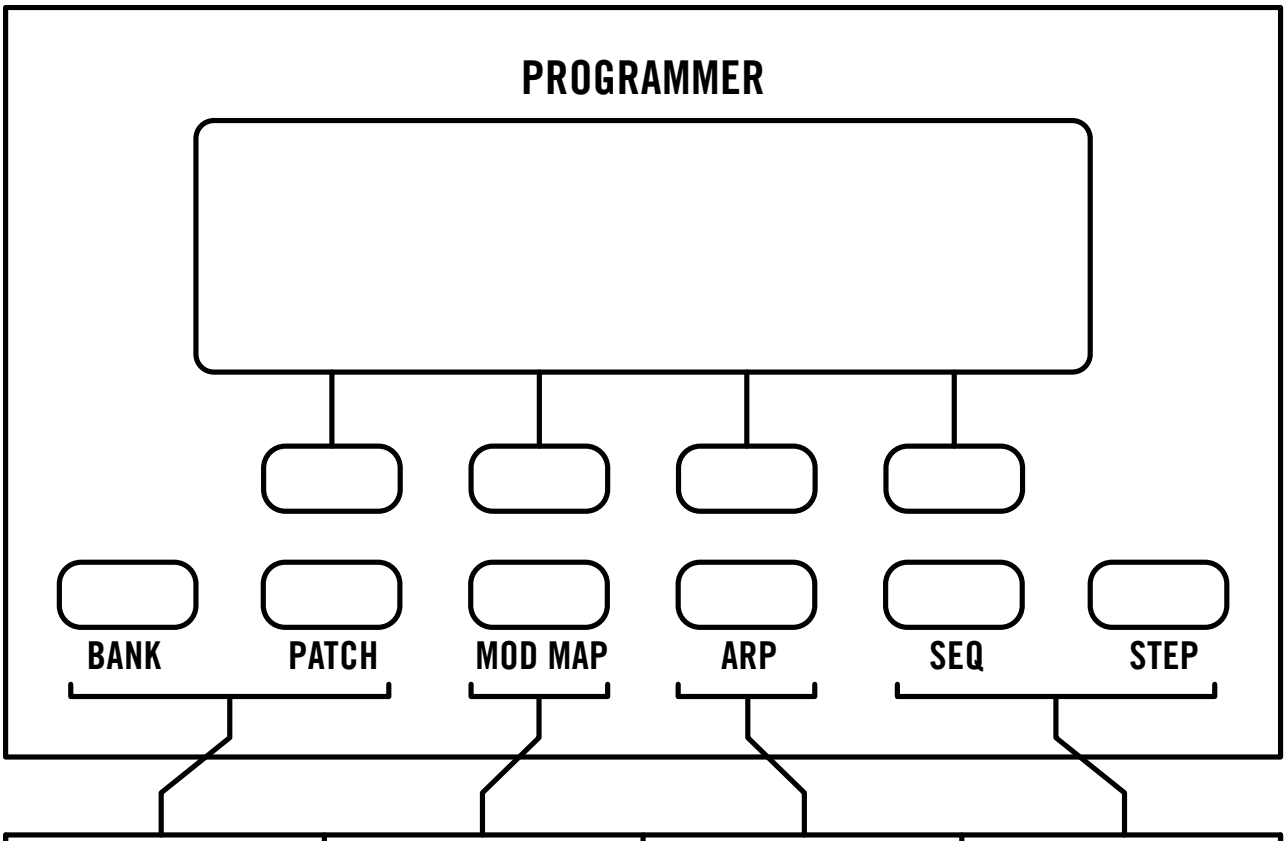
MACRO
In the **ASSIGNABLE CONTROLLERS** section you will find the **MACRO** knob – a flexible knob with no function by default, but can be used just like the **MOD WHEEL** as another point of modulation control. Experiment with the **MACRO** knob much as you would the **MOD WHEEL**, using it as a further point for expression and to introduce anything from subtle patch movement to radical patch morphing.

HEADPHONES
Below the Left-Hand Controller on the front of Muse is a 1/4” stereo headphones output. The **HEADPHONES** knob in the **OUTPUT** module controls the volume of the signal at this output.

PLAYING MUSE *(Cont.)*

LOADING AND EXPLORING SOUNDS

The **PROGRAMMER** is the primary interface on Muse for loading patches, saving patches, and creating sequences and modulation maps. The **SELECT** and **VALUE** encoders are used for scrolling through parameters for editing (**SELECT**) and editing the currently highlighted parameter (**VALUE**) while the four **SOFT BUTTONS** found below the screen change their function based on the current screen view. A more thorough guide of all **PROGRAMMER** features can be found later in this manual, but for now let's just focus on how to navigate through patches and load them.



BANK/PATCH	MOD MAP	ARP	SEQ/STEP
Patch storage and management	Main interface for modulation editing	ARPEGGIATOR rhythm programming and advanced settings	SEQUENCER loading & saving, advanced settings, and per-step editing

PLAYING MUSE *(Cont.)*

SELECTING A PATCH

Clicking the **PATCH** button in the **PROGRAMMER** will bring up the **PATCH** view, displaying the name of the currently selected patch. Buttons 1 through 16 on the **PROGRAMMER** can be used to select any of the 16 patches in the current bank.

As you play any given patch, explore how patches respond to velocity and aftertouch as well as the **MOD WHEEL** and **MACRO KNOB.** Muse patches utilize some combination of these expressive controls, so a patch may be much more than initially meets the eye. You can always look in the **MOD MAP** to explore each of the modulation routings in the currently loaded patch (more about the **MOD MAP** can be found later in this manual).

SELECTING A BANK

Pressing the **BANK** button in the**PROGRAMMER** will bring up the **BANK** view, displaying the name and number of the current bank as well as a list of the patches in that bank. Use **PROGRAMMER** buttons 1 through 16 to switch to any of the 16 available banks. You can also scroll through the list of patches in a bank with the **SELECT** encoder and select any patch by pressing down on the **SELECT** encoder.

CREATING AND SAVING SOUNDS

To create your own entirely new sounds, you can begin from one of three different starting points. Pressing the **PANEL** button in the **PROGRAMMER** will override any saved panel settings and revert them to those currently expressed by the knobs, sliders, and switches on the front panel. This is a great starting point for creating new sounds since all panel controls will represent their current setting. It's important to save before disengaging the **PANEL** button, as changes made while **PANEL** was engaged will not be retained when reverting to the stored patch.

NOTE: PANEL *will only revert to the panel settings for the currently active timbre – indicated by the* ***TIMBRE A/B*** *buttons in the* ***VOICE CONTROL*** *module.* ***TIMBRE*** *functionality will be covered later in this manual. Additionally, pressing* ***PANEL*** *will not affect parameters found in the* ***MORE*** *pages.*

Alternatively, you can load any patch and use it as a starting point. Synthesis settings will be those saved in the patch and not (necessarily) match the physical settings of the front panel. Moving a panel control (**FILTER 2 CUTOFF** knob, for example) will immediately override the setting for that parameter in the patch and remain overridden by the panel control until the patch is reloaded. An asterisk will appear next to the patch name whenever a control is changed from its preset value.

NOTE: *You can use the* ***COMPARE*** *button to compare the saved version of the current* ***PATCH*** *with the edited version. Press* ***COMPARE*** *(LED will light up) and the saved version will play, while with* ***COMPARE*** *unlit the currently edited version will play.*

PLAYING MUSE *(Cont.)*

Finally, any patch location without a patch already saved will be identified as **INITIAL PATCH**. Loading it will load an initialized patch that can serve as a nice starting point for creating a new sound. You can also load the initialized patch by pressing the **INIT** button in the **PROGRAMMER** and clicking either the soft button **PATCH** to initialize the entire patch, or one of the soft buttons **TIMBRE A/B** to initialize only one timbre. As the screen says, loading the initialized patch via the **INIT** button will not overwrite a saved patch. Any changes made after using **INIT** still need to be saved.

SAVING A PATCH

If you have a sound you would like to save as a patch, press the **SAVE** button (**PATCH** in the **PROGRAMMER** must be selected). The **SAVE PATCH** view will ask you where you would like to save the current patch – defaulting to the currently selected patch location (whose corresponding **PROGRAMMER** button will be flashing). You can save to the current location if you want to overwrite the patch at that location or choose a new patch location with the **PROGRAMMER** buttons.

In the **EDIT NAME** view use the **SELECT** and **VALUE** encoders to enter a name for your patch. Press the **RANDOM** soft button to generate some random words for inspiration. Once you have a patch name you are satisfied with, press **SAVE NAME** to return to the **SAVE PATCH** view and press **CONFIRM** to save your patch to the currently selected (blinking) patch location.

NOTE: *You can use the* ***INIT*** *button to delete characters on the* ***EDIT NAME*** *page, and the combination of* ***SHIFT + INIT*** *can insert spaces.*

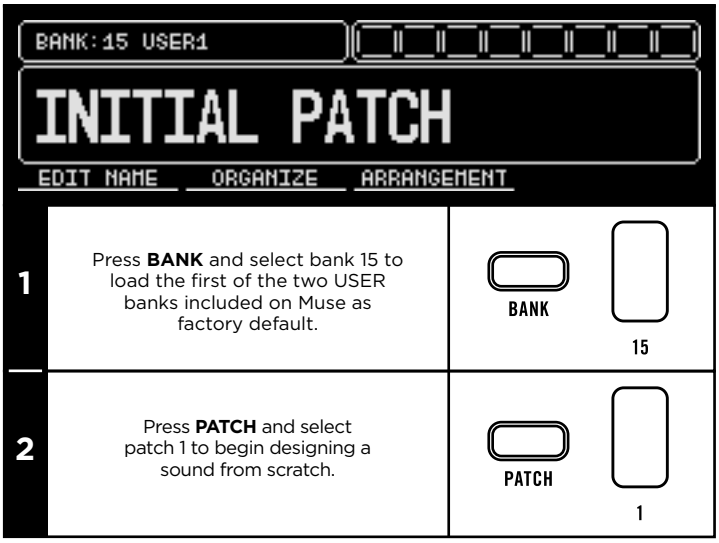
HOW TO SYNTHESIZE WITH THE MOOG MUSE

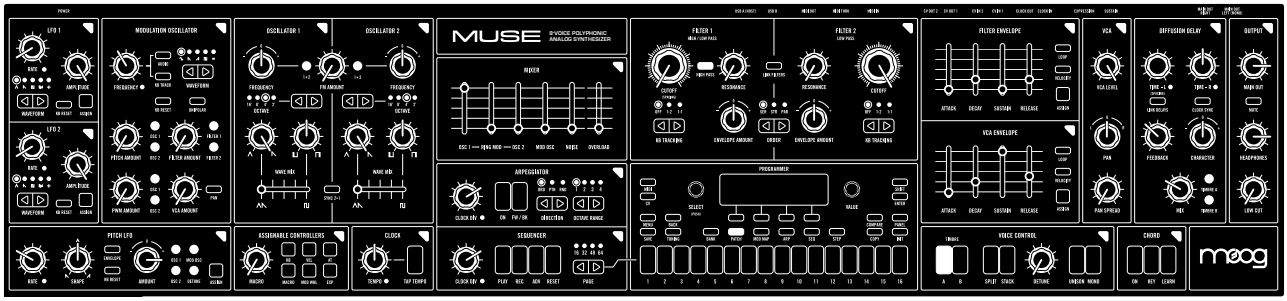
In this section we will walk through the process of synthesizing a sound on the Moog Muse. We will visit all of Muse's eighteen different modules and explore the many ways they can each influence the creation of new and distinctive sounds. If you are new to analog synthesizers, this section will help you better understand the basics of analog synthesis as well as Muse's layout. But even if you already have a solid grasp of how analog synthesizers work, this section will help familiarize you with Muse's workflow (and you may learn something new in the process).

STARTING POINT

When designing a new patch you can start from an existing patch (by loading a **PATCH**), an initialized patch (by either pressing **INIT** or loading a blank **PATCH**), or with the current panel settings (by pressing **PANEL**).

For this walkthrough we will start with the initialized patch. Press **BANK** and select bank 15 to load the first of the two **USER** banks included on Muse as factory default. Press **PATCH** and select patch 1 to begin designing a sound from scratch.





If you would like to match the panel controls to the settings of the initialized patch, you can refer to the figure above. It is not necessary to match your panel settings, as the initialized patch settings will already be loaded in memory and as you go through and change the panel controls each control will be overridden by whatever panel changes you apply. However, it may be a good idea to take the time to match your Muse's panel to the above initialized patch so that you have a clearer visual idea of everything that is going on as we proceed.

HOW TO SYNTHESIZE WITH THE MOOG MUSE *(Cont.)*

ANALOG SIGNAL PATH

Let's begin with the elements of the analog signal path – the **OSCILLATORS** and **MODULATION OSCILLATOR, MIXER, FILTER,** and **VCA.**

Press a key and you will hear **OSC 1** sounding – a basic sawtooth wave. As you hold down a key, fade in **OSC 2** on the **MIXER** to hear **OSC 2**, creating a much richer musical tone. Two oscillators offer more sound design options than one, so play with the **FREQUENCY** control of **OSC 2** to adjust the amount of detuning between the two oscillators.

TIP: *Setting the* ***FREQUENCY*** *of* ***OSC 2*** *just slightly above or below noon is a common way of turning the static sound of only one oscillator into a much richer and textured tone. When* ***OSC 2*** *is just slightly detuned from* ***OSC 1*** *the two oscillators interact and interfere with each other to give motion to the sound through phase cancellations – a sound reminiscent of a chorus effect. In fact, chorus was often used on many classic single oscillator poly synths to mimic the sound of detuned dual oscillators.*

Tune **OSC 2** down an octave from **OSC 1** by setting the **OCTAVE** of **OSC 2** to **8'**. Since **OSC 1** is stored as a sawtooth wave in the initial patch, play with the **WAVE MIX** and **PULSE WIDTH** controls of **OSC 2** to get a nice square wave to complement **OSC 1** – setting **WAVE MIX** fully to the right and ensuring **PULSE WIDTH** is at noon.

In the **MIXER** you can play with the relative levels of **OSC 1** and **OSC 2** as well as their **RING MOD**ulated output to add some extra metallic harmonic and inharmonic tones. Also present in the **MIXER** is a white **NOISE** generator and the **MOD OSC**, which can function at low frequencies for modulation or as a third audio-rate oscillator to add extra thickness to your tone. Each channel in the mixer is at a strong unity gain level when the fader is at its maximum, and the **OVERLOAD** slider will overdrive the sum - adding overtones in the way the Moog CP3 mixer did back in the 1960s.

The **MIXER** output is fed into the two **FILTER**s, which in this initial patch are set up in series with **FILTER 1** as a highpass filter and **FILTER 2** as a traditional Moog lowpass ladder filter. While the **FILTER**s can be rerouted, linked, and configured for dramatic timbral movement, for this walkthrough let's keep things simple. Keep **FILTER 1** completely open (which in the case of a **HIGHPASS** filter means the **CUTOFF** knob is fully counterclockwise) and turn your attention to **FILTER 2**, turning the **CUTOFF** down to around 12 o'clock for a smoother, almost electric piano tone.

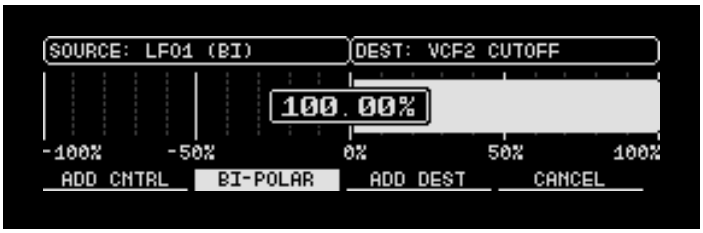
Let's add a bit of movement with the **FILTER ENVELOPE** by turning the **FILTER 2 ENVELOPE AMOUNT** control a bit clockwise from 12 o'clock, adjusting how much the envelope opens the filter. The **FILTER ENVELOPE** sliders adjust the shape of the envelope contour in response to your playing. Take time to play with how these controls interact before settling on a nice brassy tone with **FILTER 2 ENVELOPE AMOUNT** set to around 2 o'clock (right around the + sign on the panel) and the **ATTACK, DECAY, SUSTAIN,** and **RELEASE** sliders of the **FILTER ENVELOPE** all set to around 25% (or the second line from the bottom).

With the **VCA ENVELOPE** controls we can adjust the envelope contour used to control the volume of Muse. Setting **SUSTAIN** to maximum will let our notes sustain at full volume for as long as we hold down the keys. Set around 50%, the notes will sustain at half their volume while the dynamics of each note over time are set by **ATTACK, DECAY,** and **RELEASE.** For this brassy sound we can keep the **VCA ENVELOPE** settings at their initialized settings: **ATTACK** set to 0%, **DECAY** 25%, **SUSTAIN** 90%, and **RELEASE** set around 35%.

HOW TO SYNTHESIZE WITH THE MOOG MUSE *(Cont.)*

ADDING MODULATION

Muse is a modulation powerhouse and springs to life with its powerful and deep modulation capabilities. You can animate any sound by moving a knob with your hand, but when we speak of modulation we mean programming some voltage source in Muse (an LFO, an envelope, or anything else) to move a knob for you. In this section we will look at the many ways to add modulation to a patch.



The first (and most basic) source of modulation in Muse is one of its two general **LFO**s. Let's use **LFO 1** to modulate the **FILTER 2 CUTOFF**, adding some nice low frequency movement to the lowpass filter. Press the **ASSIGN** button on **LFO 1** to bring up the quick assign view. Moving a panel control will assign that knob as the destination for **LFO** modulation as well as set the depth of modulation. Modulation routings can be set to a positive or negative value. This means that when using the quick assign view, a setting of noon on the destination knob will result in no modulation. Setting the destination knob above noon will result in a positive modulation depth and a setting below noon will result in a negative modulation depth. Turn the **FILTER 2 CUTOFF** knob fully clockwise to set 100% modulation from **LFO 1** to the filter cutoff. Press **ENTER** on the **PROGRAMMER** to confirm.

TIP: *Though the **FILTER 2 CUTOFF** knob is now at maximum, **FILTER 2 CUTOFF i**s still set where we last left it around noon – the quick assign process didn't change that. You can move the **FILTER 2 CUTOFF** knob back to noon for visual coherence if you like.*

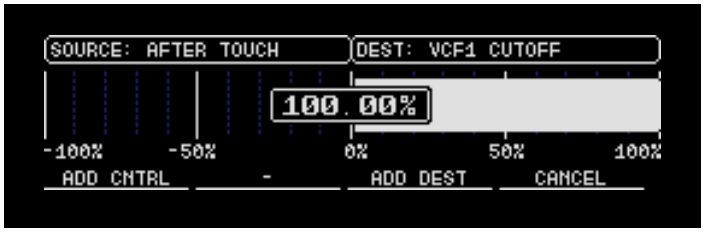
Set the **RATE** of **LFO 1** to around 11 o'clock, keep the **WAVEFORM** set to triangle, and try adjusting the **AMPLITUDE** control of **LFO 1** to see how it influences modulation depth. The **AMPLITUDE** knob is a handy way to control lots of modulation at once, as it scales the strength of **LFO 1** at the source and will apply to every destination **LFO 1** is assigned to. In this case, **AMPLITUDE** set around 9 o'clock provides nice subtle filter vibrato.

LFO 2 is exactly the same as **LFO 1,** so instead let's turn our attention to the **PITCH LFO**. Turn the **AMPLITUDE** of **LFO 1** all the way down so we can focus more precisely on our pitch modulation. The **PITCH LFO** is a dedicated **LFO** for modulation of the three audio **OSCILLATORS** (**OSC 1**, **OSC 2**, the **MOD OSC**, and global **DETUNE**) and is optimized for vibrato duties. Click **OSC 1** and **OSC 2** to turn on modulation routing to the two primary OSCILLATORS and you will hear a nice subtle vibrato applied to the oscillators. **AMOUNT** is scaled to around two semitones at full strength to allow for precise vibrato effects. The initialized settings of the **PITCH LFO** give us a nice vibrato sound right out of the gate, so let's keep **RATE** set to around 9:30, **SHAPE** set to noon (for a triangle wave) and **AMOUNT** set to around 3 o'clock.

TIP: *Like the two **LFO**s, the **PITCH LFO** can be assigned anywhere via the **ASSIGN** button.*

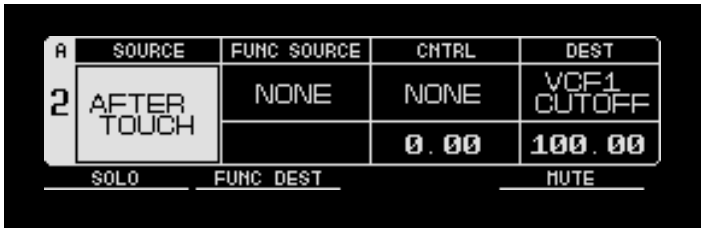
An extremely powerful source of modulation in Muse is the **MODULATION OSCILLATOR** – an analog oscillator that can function as a third audio oscillator alongside the two **OSCILLATORS** but which can also be slowed to **LFO** rate and has many pre-configured modulation routings on the panel. Raise the **FILTER AMOUNT** to noon and then press **FILTER 2** to turn on modulation routing to the **FILTER 2 CUTOFF** – you will suddenly hear a lot of filter movement! Since the **MODULATION OSCILLATOR** is a per-voice analog oscillator, each voice has its own analog **MODULATION OSCILLATOR** modulating its filter, creating subtly phased modulation between voices. Press the **FILTER 2** button again to disable the modulation as we move forward.

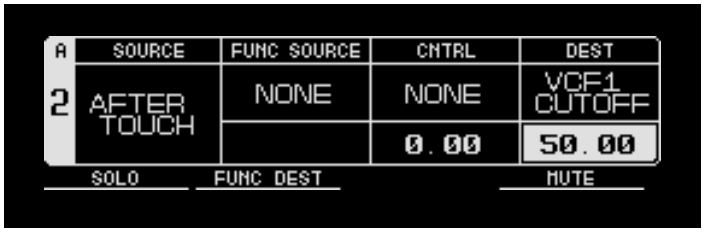
HOW TO SYNTHESIZE WITH THE MOOG MUSE *(Cont.)*



Using the **ASSIGNABLE CONTROLLERS** module we can assign performance controls throughout Muse. Press **AT** to bring up the quick assign view to assign keyboard aftertouch. With the quick assign view open, move **FILTER 1 CUTOFF** fully clockwise and press **ENTER** to assign aftertouch to modulate the highpass filter. Play a key and then depress further to activate aftertouch, which will turn up the **FILTER 1 CUTOFF**. Turn the **RESONANCE** of **FILTER 1** fully clockwise for a more dramatic effect.

USING THE MOD MAP





If you would like a more subtle range of aftertouch movement you can edit your modulation in the **MOD MAP**. Click **MOD MAP** in the **PROGRAMMER** and (if you've been following this walkthrough precisely) you will find the aftertouch modulation you just created by pressing button 2 in the **PROGRAMMER**'s bank of 16 buttons – thereby accessing the second modulation slot. You will see **AFTERTOUCH** as the source, **VCF1 CUTOFF** as the destination, and 100 as the modulation depth. Using the **SELECT** encoder, highlight the modulation depth setting (found under the **VCF1 CUTOFF** destination) and use the **VALUE** encoder to scale it back to around 50 for more subtle aftertouch movement.

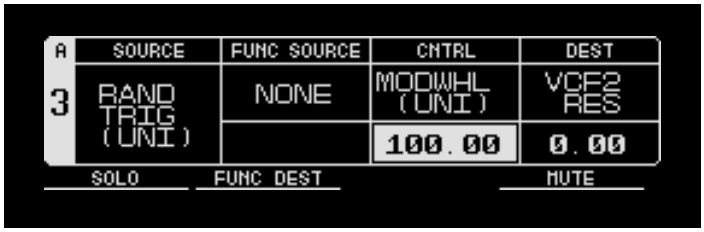
Let's create another modulation routing using the **MOD MAP** itself. Press button 3 to move to the third modulation slot (which should be empty if you've been following this walkthrough closely). Using the **SELECT** encoder, highlight the modulation **SOURCE** and turn the **VALUE** encoder to scroll through the modulation sources until you see **RAND TRIG (UNI)** to choose a unipolar instance of Muse's sixteen per-voice random voltage generators. **RAND TRIG** generates a distinct random value for each voice with every key press. Further, because there are technically 16 independent random voltage generators in the **MOD MAP**, every slot in the **MOD MAP** where **RAND TRIG** is used will generate a separate set of per-voice random values! Set the modulation destination as **VCF2 RES** by highlighting the **DEST** box with the **SELECT** encoder and scrolling with the **VALUE** encoder until you've hit **VCF2 RES**.

TIP: *You can also click down the* ***SELECT*** *encoder on the* ***DEST*** *box setting it blinking. Now when you move a control – in this case the* ***RESONANCE*** *knob on* ***FILTER 2*** *– you will select that destination. Click* ***SELECT*** *again or simply scroll away from highlighted box using the* ***SELECT*** *encoder to confirm.*

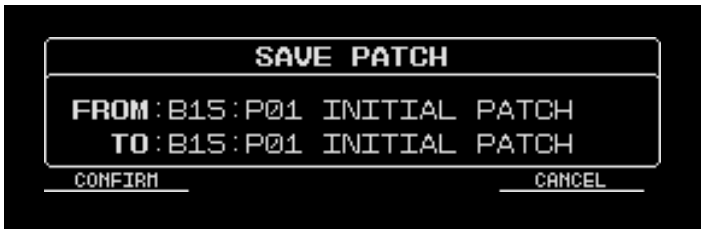
HOW TO SYNTHESIZE WITH THE MOOG MUSE *(Cont.)*

Modulation controllers let you use a secondary control to scale the modulation depth for expressive movement. This allows you to effectively add an extra Voltage-Controlled Amplifier (**VCA**) on the output of the modulation source which will be controlled by the modulation slot's selected controller. Let's add the modulation wheel next to the keyboard as a controller by clicking the **SELECT** encoder while the **CNTRL** box is highlighted and then pressing the **MOD WHL** button in **ASSIGNABLE CONTROLLERS**. Set the modulation depth under **DEST** to 0 and then set the modulation depth under **CNTRL** to 100. Move the modulation wheel up to fade in the resonance modulation – you will hear the resonance change every time you press a new key. You can use the **MOD WHEEL** to scale the amount of this modulation, with more pronounced random resonance modulation with the **MOD WHEEL** set near its maximum and more subtle modulation with the **MOD WHEEL** set lower. You can use the same controller to control multiple modulation routings in the **MOD MAP** to turn one sound into a completely new one by moving a single control.

NOTE: *It's important to note that the summed value between the* ***DEST*** *and* ***CNTRL*** *modulation boxes cannot exceed a positive depth of 100 or go below a negative depth of –100. For example, if the* ***DEST*** *box is set to 50, the* ***CNTRL*** *box will max out at 50, and the same will happen with negative depths.*



SAVING PATCHES



It's a good idea to get into the habit of saving sounds as you work on them. With the **PATCH** button selected in the **PROGRAMMER**, press the **SAVE** button. You will be prompted to select a patch location in the current **BANK** with the 1-16 buttons. Confirm your location, edit the name to something you think fits with your sound (or press **RANDOM** for some inspiration), and click **SAVE PATCH** to save your patch into memory.

BI-TIMBRALITY AND VOICE CONTROL

Muse is a bi-timbral synthesizer, meaning that at any time it can play two completely different sounds, both of which can be stored in a single patch. The **VOICE CONTROL** module will show you which timbre you are currently editing via the lit A or B button - so far we've been editing timbre A in this walkthrough. Press B and you will immediately be presented with the initialized patch again, which you can edit just as we have done up to this point with timbre A to create a completely separate sound. You can toggle back and forth between timbres with the A and B buttons, edit the relative volumes of each timbre with the **VCA LEVEL** knob in the **VCA** section, and further edit how the two timbres interact with each other in the **VOICE CONTROL MORE** menu.

The **VOICE CONTROL** module is a powerful control hub – you can press **SPLIT** to split the keyboard (with **TIMBRE A** playing below middle C and **TIMBRE B** above it) or you can press **STACK** to have every key play back both **TIMBRES** simultaneously. For now, though, let's just continue with the sound we've been programming for **TIMBRE A** by disabling any **STACK** or **SPLIT** functionality and pressing **A** to focus on **TIMBRE A.**

NOTE: *The key on the keyboard for timbre* ***SPLIT*** *can be found in the* ***VOICE CONTROL MORE*** *menu. If you want to switch which timbre is assigned to either side of the split, this can be done via the* ***SWAP TIMBRE SETTINGS*** *option in the* ***VOICE CONTROL MORE*** *menu.*

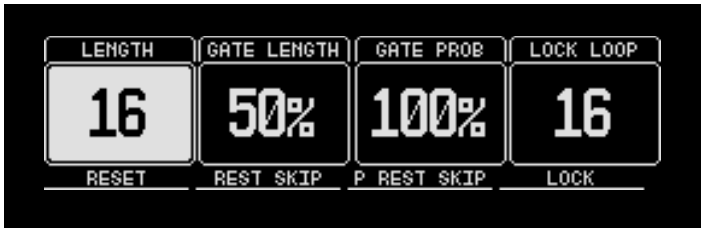
HOW TO SYNTHESIZE WITH THE MOOG MUSE *(Cont.)*

ARPEGGIOS AND CHORDS

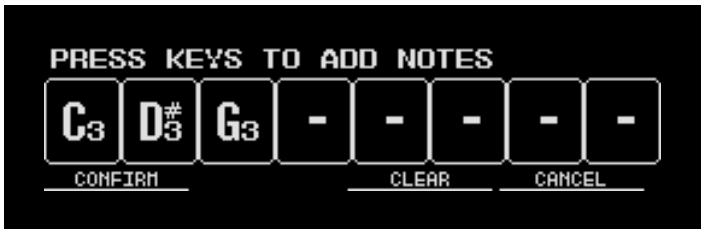
Muse contains two powerful modules for programming patterns – the **ARPEGGIATOR** and the **SEQUENCER.** Hold down a chord and press **ON** in the **ARPEGGIATOR** to immediately begin arpeggiating the held chord. Press **HOLD** in the Left-Hand Controller to hold the chord for you, continuing the arpeggiator and freeing your hands. Both the **ARPEGGIATOR** and **SEQUENCER** are driven by the **TEMPO** set in the **CLOCK** module, but each can be set to a rhythmically related tempo by their respective **CLOCK DIV** knobs.

TIP: *With* ***DIRECTION*** *set to* ***PTN****, numerous advanced pattern configurations are available in the* ***MORE*** *menu, including up/down movement, leapfrog motions, and inner/outer alternating behavior.*

NOTE: TEMPO *settings are stored with a sequence - not with a patch.*



Use the **DIRECTION** switch to toggle the direction between the order the notes were played (**ORD**), a configurable pattern (**PTN**), or random (**RND**) and adjust the range with the **OCTAVE RANGE** switch. The **FW/BK** button will turn on pendulum back and forth behavior. Press **ARP** in the **PROGRAMMER** to bring up the **ARP** view, where you can use the step buttons (1-16) to program a rhythm or further configure your arpeggio (see the **ARPEGGIATOR** section below).



You can also use the **CHORD** module to play back chord sequences with the **ARPEGGIATOR.** First turn the **ARPEGGIATOR** off (via the **ON** button) and make sure HOLD in the Left-Hand Controller is off. Press **LEARN** in the **CHORD** module and play any chord (say a C minor chord – C, D#, G). Press the **CONFIRM** soft button in the **PROGRAMMER** to store the chord, press **ON** in the **CHORD** module, and then pressing a single key will play back a minor triad with the pressed key as the root. Take it one step further by turning **ON** the **ARPEGGIATOR** and playing a chord – which will now play a sequence of minor triads with each key pressed as their root!

TIP: *Combined with the* ***KEY*** *functionality in the* ***CHORD*** *module (see the CHORD section below), the* ***ARPEGGIATOR*** *is capable of entire compositions itself.*

Turn the **ARPEGGIATOR** off, turn **CHORD** mode off, and turn **HOLD** off as we turn our attention to the **SEQUENCER.**

HOW TO SYNTHESIZE WITH THE MOOG MUSE *(Cont.)*

CREATING A SEQUENCE

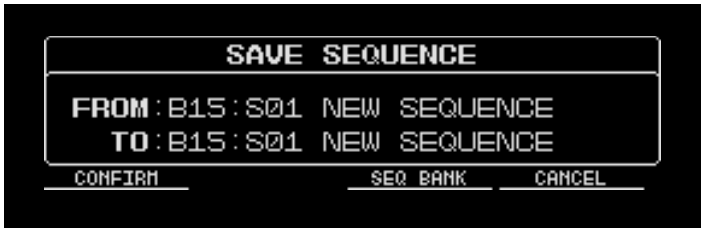
While all **ARPEGGIATOR** settings are saved per patch, the **SEQUENCER** allows you to create global sequences that can be used with any patch in Muse. With up to 256 saved sequences, your musical ideas and compositions can live independently of patches and you can audition patches on the fly to find the best sound for any sequence you're working on.

1	Press the **SEQ** button in the **PROGRAMMER** to bring up the sequencer view. Muse comes with 14 banks of 16 sequences – one for each factory PATCH.		
2	Let's load up a new sequence by first pressing the **SEQ BANK** soft button to enter sequence bank selection mode and then pressing location **15** to switch to sequence bank **15**, which is full of initialized new sequences.		
3	Press **SEQ BANK** again to switch out of sequence bank selection and press location **1** to load sequence **1** in sequence bank 15.		
4	Press **REC** in the **SEQUENCER** to begin recording a sequence. With each note or chord played the sequencer will advance one step - use the **ADV** button to skip to the next step (thereby entering a rest).		

You will see the **PROGRAMMER** switch to the **STEP** view and move through the steps of the sequence as it advances. Press **REC** to exit step recording mode and press **PLAY** to play back your sequence (press **PLAY** again to stop playback.). Pressing **SHIFT+REC** (**REC** will blink) will turn REC to overdub mode, allowing you to add additional layers to your sequence using the same entry method described above without replacing notes.

TIP: *Press* ***INIT+REC*** *to undo any notes added since the last time* ***REC*** *was turned on.*

You may also turn on **REC** while the sequencer is playing to enter **LIVE RECORD** mode, replacing notes in your sequence live as you play. Pressing **SHIFT+REC** (**REC** will blink) while the sequencer is playing will switch to overdub mode, allowing you to add live overdubs on top of the current sequence.



Press **SEQ** in the **PROGRAMMER** to name your sequence, change the sequence length, quantize the timing of a sequence, and more (see **SEQUENCE SETTINGS** in the **SEQUENCER** section below). Each step button (1-16) will correspond to a different saved sequence location in the current bank. Once you have a sequence you like you can press **SAVE** in the **PROGRAMMER** - you will be prompted to select a sequence location with the 1-16 buttons, confirm a sequence name, and finally save the sequence into memory.

TIP: *Hold* ***SHIFT*** *and press the* ***LOCK PATCH*** *soft button to lock the current patch to the sequence, which will load the locked patch every time you load the sequence.*

HOW TO SYNTHESIZE WITH THE MOOG MUSE *(Cont.)*

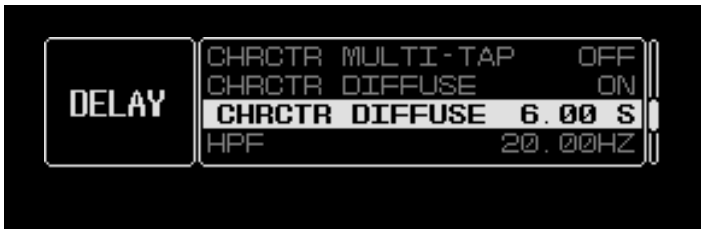
For advanced sequencer functionality, you can press **STEP** in the **PROGRAMMER** to edit each individual step in the currently active sequence. Choose a step with the step buttons (1-16) and use the **PROGRAMMER** to edit the notes in that step, alter gate lengths and velocities, access probability settings, and access parameter recording to allow the sequencer to modulate most panel controls on Muse. The sequence length (among other settings) can be configured in the **SETTINGS** page in **SEQ** or **STEP** view and steps 17 through 64 can be accessed for **STEP** editing with the **PAGE** button. Refer to the **SEQUENCER** section later in this manual for a thorough dive into everything Muse's **SEQUENCER** is capable of.

STEREO ANIMATION

Finally, let's turn back to the audio signal path and explore the stereo capabilities of Muse. Run an arpeggio or sequence to have some sounds playing and adjust **PAN** in the **VCA** section to pan Muse from left to right. Leave **PAN** centered and increase **PAN SPREAD** – you will notice that as you turn up the knob you will increasingly pan Muse's eight voices across the stereo field. **PAN SPREAD** is a powerful stereo control that can immediately create a wide stereo image from your patches.

TIP: *In the* ***VCA MORE*** *menu you will find numerous settings to govern* ***PAN SPREAD*** *behavior, including the ability to control per-voice* ***LFO*** *phase based on a voice's pan position.*

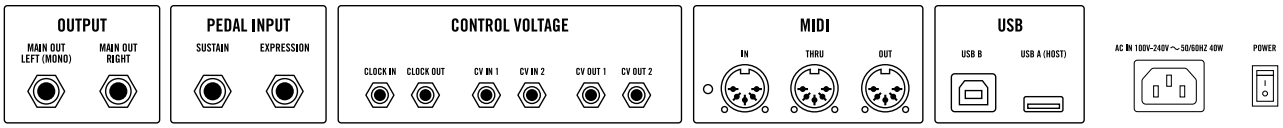
Muse features an extremely powerful **DIFFUSION DELAY** – a digital delay that adds motion and multi-dimensionality to your sound and which can be fully bypassed per timbre. Click the **TIMBRE A** button to route **TIMBRE A** to the **DIFFUSION DELAY** and you will begin to hear the echoes produced by the **DIFFUSION DELAY**. You can play with the left and right **TIME** controls as well as **FEEDBACK** to change the delay times and density of echoes respectively, while the **CHARACTER** knob will filter the feedback – operating as a lowpass filter to the left of noon and a highpass filter to the right. With a rhythmic pattern playing from either the **ARPEGGIATOR** or **SEQUENCER**, press the **LINK DELAYS** button as well as **CLOCK SYNC** to sync the **DIFFUSION DELAY** to multiples or divisions of the master clock. With the delays linked, the **TIME-R** knob will set the delay time for both delays, while **TIME-L** will create a timing offset between channels for even bigger stereo sounds.



A wealth of configurable options can be found in the **DIFFUSION DELAY MORE** menu, accessed with the triangular MORE button found at the top of the module. The **CHARACTER** knob is a programmable knob capable of many functions. By default it functions as a DJ-style lowpass/highpass filter (lowpass below noon, highpass above) but is also capable of adding diffusion to the delay signal. Scroll down to **CHRCTR DIFFUSE**, turn it **ON**, adjust the **CHARACTER** knob to around 1 o'clock, and play with the **MORE** menu's **CHRCTR DIFFUSE TIME** setting to hear the **DIFFUSION DELAY** as it smears the delay through a series of all-pass filters – imitating the effect of the delayed sound bouncing off the walls in a larger and larger room.

MUSE MODULES

REAR PANEL AND CONNECTORS



MAIN OUT LEFT (MONO)
1/4" TRS output containing the left channel of Muse's main output, with its volume set by the **MAIN VOLUME** control in the **OUTPUT** section. Will contain a mono sum of Muse's stereo output if no connection is present in the **MAIN OUT RIGHT** output.

MAIN OUT RIGHT
1/4" TRS output containing the right channel of Muse's main output, with its volume set by the **MAIN VOLUME** control in the **OUTPUT** section.

SUSTAIN
1/4" TS Sustain pedal input, which will sustain and hold any keys when pedal is pressed. Envelopes will hold at their sustain stage and begin their release stage when pedal is depressed. Configurable in the **CV** menu.

EXPRESSION
1/4" TRS Expression pedal input providing +5 volts on the ring connector. A compatible expression pedal (such as the Moog EP-3) will attenuate this voltage and is routable anywhere in Muse via the **ASSIGNABLE CONTROLLERS** section.

CLOCK IN
3.5mm analog clock input, allowing Muse to be synced to any external clock source. Clock sync options are available in the **CLOCK** section of Muse. Expects analog clock of 4 pulses per quarter note (**PPQN**).

CLOCK OUT
3.5mm analog clock output - configurable via the **CLOCK MORE** menu.

CV IN 1, 2
Two 3.5mm control voltage inputs, selectable as modulation sources or controllers via the **MOD MAP**.

CV OUT 1, 2
Two 3.5mm control voltage outputs, selectable as modulation destinations via the **MOD MAP**.

MIDI IN
5 pin DIN connector for receiving MIDI messages from external source.

MIDI THRU
5 pin DIN connector - MIDI signal present at **MIDI IN** input is passed to **MIDI THRU** unchanged for daisy chaining MIDI devices together.

MIDI OUT
5 pin DIN connector which will output configurable messages from MUSE (see MIDI Settings).

USB B
USB-B connector for interfacing with a computer or other host MIDI device.

USB A (HOST)
USB-A connector for connecting to other instruments with Muse as the MIDI host.

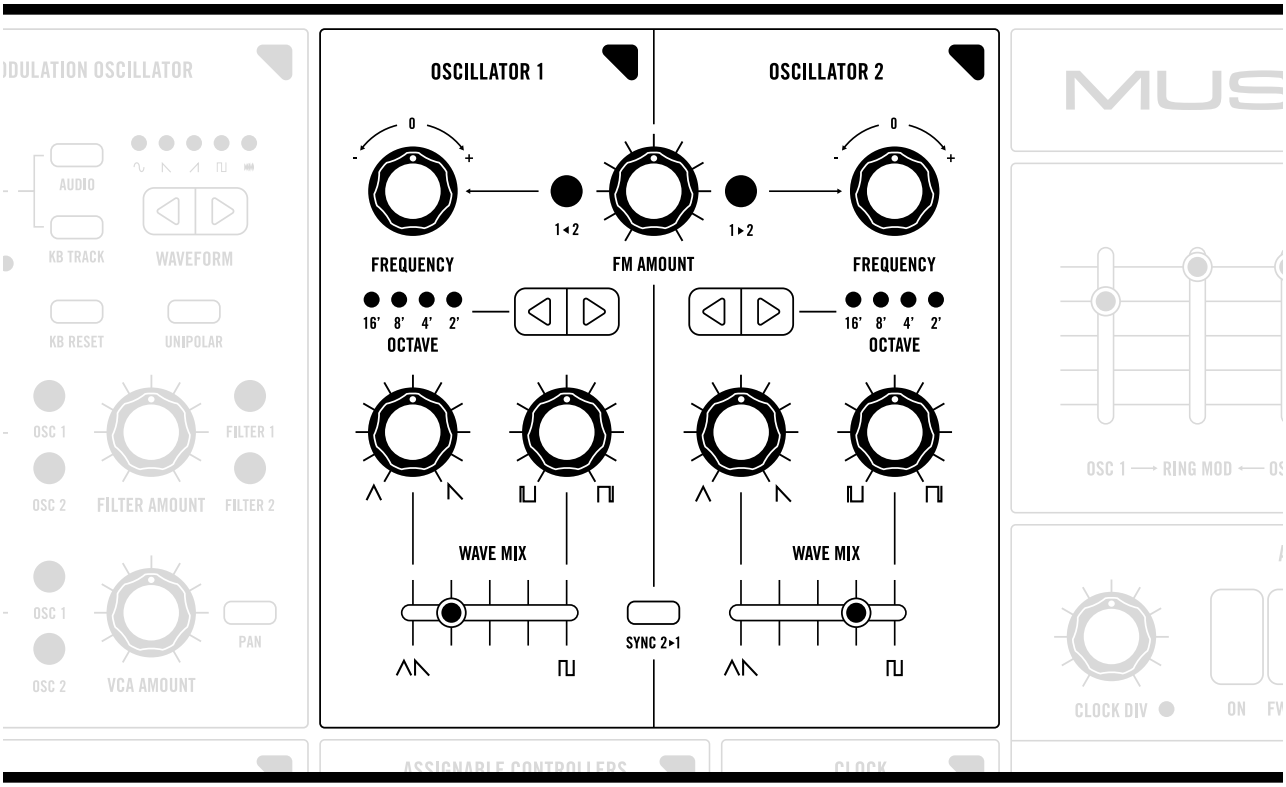
POWER
Power is supplied to Muse via an IEC connector.

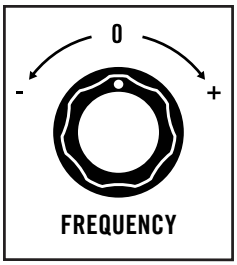
MUSE MODULES *(Cont.)*

OSCILLATORS

Each of Muse's eight voices contains three Voltage-Controlled Oscillators: **OSCILLATOR 1**, **OSCILLATOR 2**, and a **MODULATION OSCILLATOR** for a total of 24 analog oscillators within Muse. **OSCILLATORS 1** and **2** are at audio rate and are designed for a wide range of sonic possibilities, while the **MODULATION OSCILLATOR** is an extremely versatile design capable of low frequency modulation and can also act as a third audio rate oscillator (for more information see the **MODULATION OSCILLATOR** section below).

OSCILLATORS 1 and **2** are the main tonal sound sources on Muse. Each **OSCILLATOR** provides individual control of octave, waveform, and frequency settings. The pair of **OSCILLATORS** also feature bi-directional Frequency Modulation (FM) routings, enabling complex, harmonically-rich timbres. The controls for each **OSCILLATOR** will be described once, but the functionality applies to both **OSCILLATORS**.

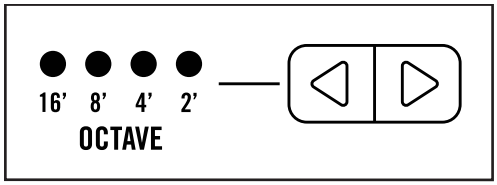




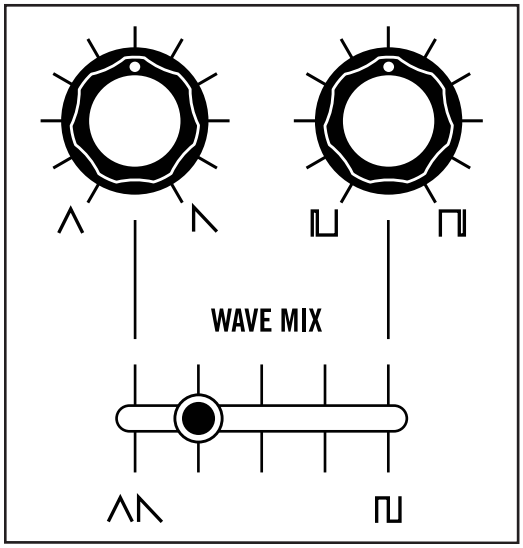
FREQUENCY
Detunes each oscillator from the pitch associated with a keyboard note. The **FREQUENCY** knob is a bipolar control, and when set to noon will be in tune with the keyboard note (if a C is pressed, a C will sound based on the **OCTAVE** setting). Turning the knob clockwise will increase the pitch of the oscillator up to a perfect fifth (+7 semitones) and turning the knob counter-clockwise will decrease the pitch of the oscillator down to a perfect fifth below the note (-7 semitones).

TIP: *Detuning the* ***OSCILLATORS*** *by setting* ***FREQUENCY*** *at noon for* ***OSCILLATOR 1*** *and setting* ***FREQUENCY*** *a little bit off from noon for* ***OSCILLATOR 2*** *is a classic method of adding thickness and body to your sound. By holding down* ***SHIFT*** *while you adjust* ***FREQUENCY*** *you can fine-tune the* ***FREQUENCY*** *setting.*

MUSE MODULES *(Cont.)*



OCTAVE
Selects the octave for each oscillator. The **OCTAVE** options are 16', 8', 4' and 2' - a standard based around classic pipe organ stop footage settings.

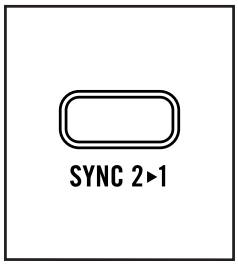


WAVE MIX
The **WAVE MIX** section is comprised of 2 knobs and a slider. This combination of controls allows for pure **TRIANGLE**, **SAWTOOTH**, **SQUARE**, and **PULSE** waveforms as well as unique shapes achieved through creative mixing of the available waveforms.

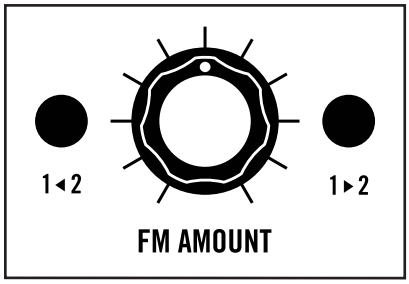
The left knob is a crossfading control that allows users to mix between a **TRIANGLE** waveform at the fully counter-clockwise position and a **SAWTOOTH** waveform at the fully clockwise position.

The right knob is a **PULSE WIDTH** control that allows users to set width of the **PULSE** waveform, with a **SQUARE** waveform available at the noon position.

The slider is an additional crossfading control that allows users to mix between the **TRIANGLE/SAWTOOTH** mixture on the left side of the slider and the **PULSE** waveform on the right side of the slider.

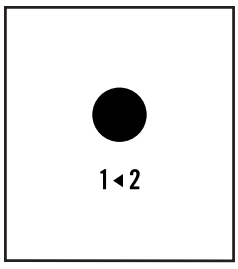


SYNC 2▸1
Engages oscillator sync of **OSCILLATOR 2** to the phase of **OSCILLATOR 1**. This means that **OSCILLATOR 2**'s waveform will be forced to reset based on the phase of **OSCILLATOR 1**. The effect of **OSCILLATOR SYNC** becomes more and more pronounced as **OSCILLATOR 2**'s pitch is increased above **OSCILLATOR** 1, yielding increasingly harmonically rich timbres as **OSCILLATOR 2** is forced to align itself with **OSCILLATOR 1**'s phase.



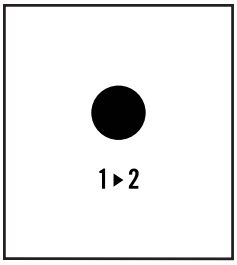
FM AMOUNT
Controls the depth of audio-rate frequency modulation (or cross modulation) between the two **OSCILLATORS**.

TIP: *The range of this control can be configured in the* ***MORE*** *menu allowing you to dial in precise FM depths for performance and per-oscillator minimum and maximum FM depth limits - even allowing for inverted FM relationships on either side of the knob.*



1◂2
Engages audio-rate frequency modulation routing where **OSCILLATOR 2** modulates the frequency of **OSCILLATOR 1** based on the **FM AMOUNT** knob setting.

MUSE MODULES *(Cont.)*



1▸2
Engages audio-rate frequency modulation routing where **OSCILLATOR 1** modulates the frequency of **OSCILLATOR 2** based on the **FM AMOUNT** knob setting.

***TIP**: With **1<2** engaged simultaneously with the **1>2** button, cross modulation can be achieved between **OSCILLATORS 1** and **2** based on the **FM AMOUNT** knob settings. Utilizing the **FM MIN/MAX** amount options in the **MORE** menu allows you to program asymmetrical frequency modulation!*

OSCILLATOR MORE MENU

Press the triangular **MORE** button at the top-right corner of either **OSCILLATOR** to access more parameters available for adjustment. These parameters will appear on the **PROGRAMMER** screen and can be adjusted using the **SELECT** encoder, **VALUE** encoder, and **SOFT BUTTONS** in the **PROGRAMMER**. Press the **BACK** button in the **PROGRAMMER** to exit and return to the **HOME** view.

GLIDE (**ON**, **OFF**. ***DEFAULT: ON)***
Selects whether the currently selected **OSCILLATOR** has glide applied to its keyboard tracking.

2>1 FM MIN AMT (0-100. *DEFAULT:0)*

2>1 FM MAX AMT (0-100. *DEFAULT:100)*

1>2 FM MIN AMT (0-100. *DEFAULT:0)*

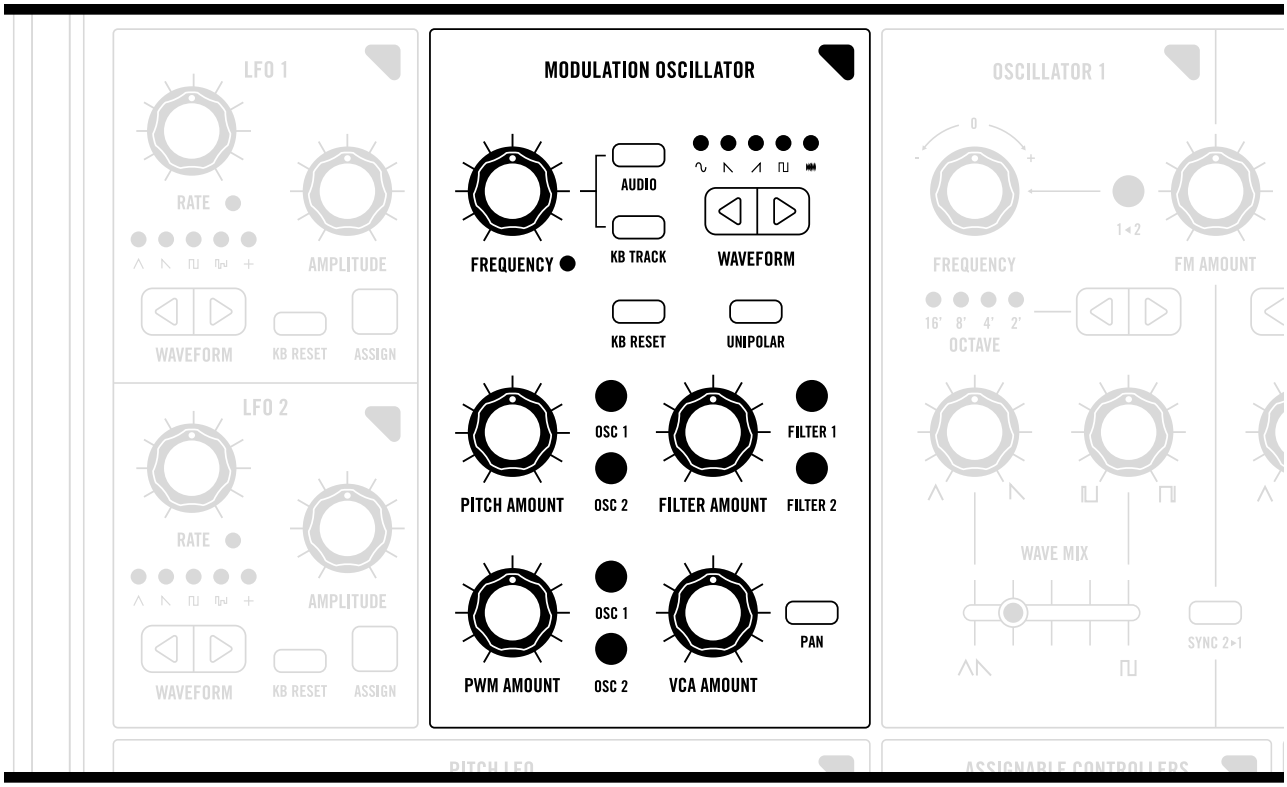
1>2 FM MAX AMT (0-100. *DEFAULT:100)*

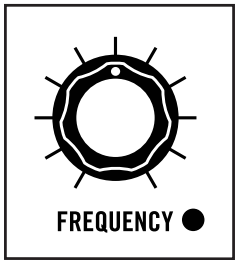
With the above **FM MIN/MAX AMT** settings you can dial in the range of Frequency Modulation via the **FM AMOUNT** knob. You can even set independent **FM** ranges for **2>1** and **1>2** to create crossfading cross-modulation and asymmetrical FM tones with a single knob! Modulation of the **FM AMOUNT** knob via the **MOD MAP** allows you to create dynamic FM motion.

MUSE MODULES *(Cont.)*

MODULATION OSCILLATOR

The **MODULATION OSCILLATOR** is a versatile utility oscillator that can be used either as a third audio-rate oscillator, or an LFO with unique per-voice functionality. When used as an audio-rate oscillator you have access to waveforms unique from **OSCILLATORS 1** and **2** - **SINE**, **RAMP**, and **NOISE**. When used at low frequencies the **MODULATION OSCILLATOR** behavior is unique in that it is always per-voice, providing 8 individual LFOs which allow for unique out-of-phase cyclic modulations.





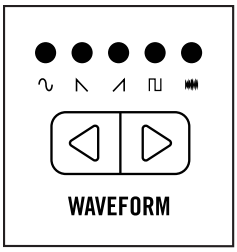
FREQUENCY
Controls the frequency of the **MODULATION OSCILLATOR**. The range of this knob will differ based on the associated **AUDIO** button setting. When the **AUDIO** button is off, the range will operate from sub-audio frequencies to around 1kHz when fully clockwise. When the **AUDIO** button is on, the range will operate from around 20Hz when fully counterclockwise to around 3 kHz when fully clockwise.

TIP: *Holding the **SHIFT** button in the **PROGRAMMER** while adjusting the **FREQUENCY** knob will allow for fine tune control.*

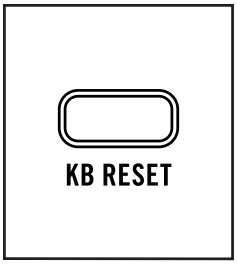
AUDIO
Sets the **MODULATION OSCILLATOR** to operate at audio-rate frequencies. This way you can use the **MODULATION OSCILLATOR** as a third **OSCILLATOR** in a patch or for audio-rate modulation duties.

MUSE MODULES *(Cont.)*

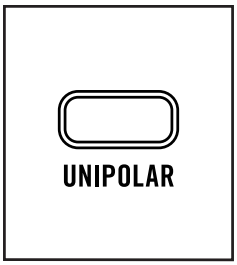
KB TRACK
Enables keyboard control of the frequency of the **MODULATION OSCILLATOR**. This is especially useful when using the **MODULATION OSCILLATOR** as a third **OSCILLATOR** in a patch but can be equally interesting when using the **MODULATION OSCILLATOR** as a per-voice **LFO**.



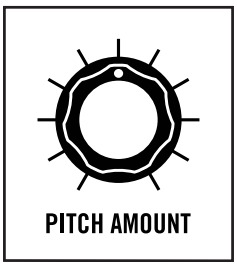
WAVEFORM
Selects the waveform of the **MODULATION OSCILLATOR**. The available shapes are **SINE**, **SAWTOOTH**, **RAMP**, **SQUARE**, and **NOISE**.



KB RESET
Resets the **MODULATION OSCILLATOR**'s wave cycle to its starting point every time a key is pressed. This can allow for more predictable and repeatable modulation behavior when using the **MODULATION OSCILLATOR** as a modulation source.

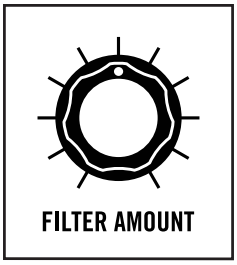


UNIPOLAR
Enables unipolar mode for the **MODULATION OSCILLATOR** (when engaged), shifting the oscillator to operate between 0V and +5V. Otherwise, the **MODULATION OSCILLATOR** is bipolar, operating from –2.5V to +2.5V (just like the two main **OSCILLATORS**).



PITCH AMOUNT
Determines the depth at which frequency modulation of the **OSCILLATOR** section occurs based on the **OSC 1** and **OSC 2** routing buttons.

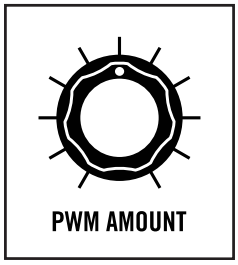
- **OSC 1**
  Enables frequency modulation of **OSC 1** via the **MODULATION OSCILLATOR.**
- **OSC 2**
  Enables frequency modulation of **OSC 2** via the **MODULATION OSCILLATOR.**



FILTER AMOUNT
Determines the depth at which cutoff frequency modulation of the **FILTER** section occurs based on the **FILTER 1** and **FILTER 2** routing buttons.

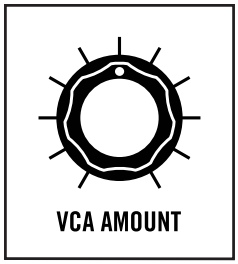
- **FILTER 1**
  Enables cutoff frequency modulation of **FILTER 1** via the **MODULATION OSCILLATOR**.
- **FILTER 2**
  Enables cutoff frequency modulation of **FILTER 2** via the **MODULATION OSCILLATOR.**

MUSE MODULES *(Cont.)*

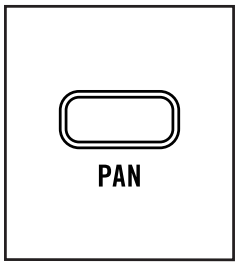


PWM AMOUNT
Determines the depth at which pulse width modulation of the **OSCILLATOR** section occurs based on the **OSC 1** and **OSC 2** routing buttons.

- **OSC 1**
  Enables modulation of the duty cycle of the **OSC 1** pulse/square waveshape via the **MODULATION OSCILLATOR**.
- **OSC 2**
  Enables modulation of the duty cycle of the **OSC 2** pulse/square waveshape via the **MODULATION OSCILLATOR**.



VCA AMOUNT
Determines the depth at which the **MODULATION OSCILLATOR** will modulate the amplitude of the Voltage-Controlled Amplifier (**VCA**), providing a tremolo effect.



PAN
Enables pan-position modulation of a voice in the stereo field by inverting the phase of the **MODULATION OSCILLATOR** sent to the right **VCA**.

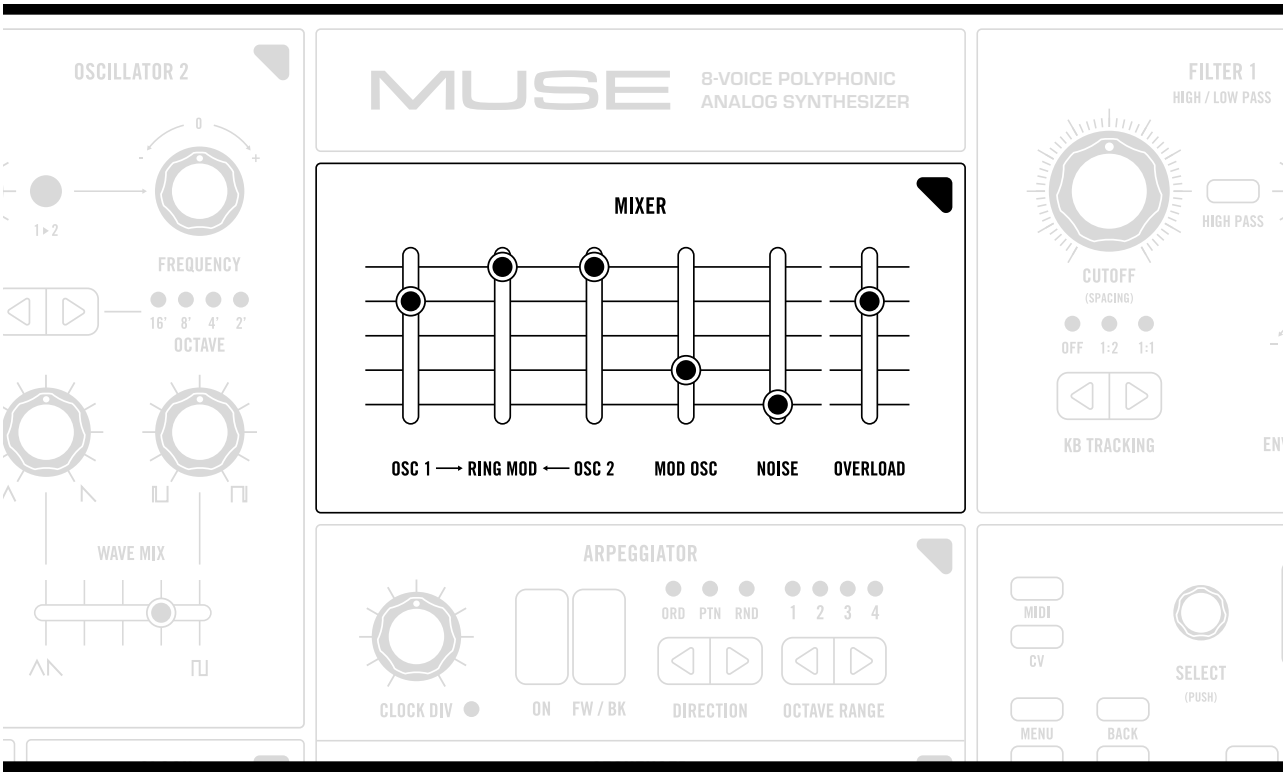
MODULATION OSCILLATOR MORE MENU

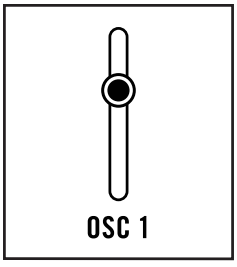
GLIDE (ON, OFF. *DEFAULT: ON)*
Selects whether the **MODULATION OSCILLATOR** has glide applied to its keyboard tracking.

MUSE MODULES *(Cont.)*

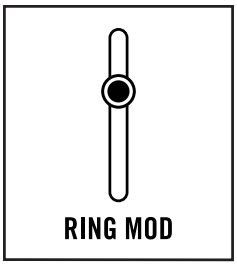
MIXER

The **MIXER** allows the user to mix the different sound sources of Muse before being routed into the **FILTER** section. While historically Moog synths feature mixers that will soft clip and saturate signals at full strength, this isn't necessarily ideal for polyphonic sound. To allow for broader flexibility, Muse defaults to mixing signals precisely and cleanly, however the classic Moog mixer behavior can still be achieved by using the **OVERLOAD** slider to add soft clipping and saturation.



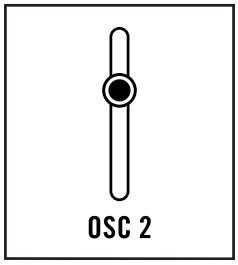


OSC 1
Controls the volume of **OSCILLATOR 1** in the **MIXER**.

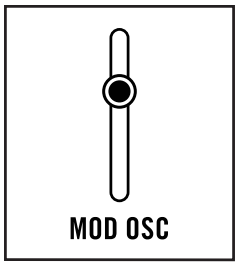


RING MOD
Controls the volume of the **RING MODULATOR** in the **MIXER**. The **RING MODULATOR** is a four-quadrant multiplier outputting the sum and difference tones resulting from all frequencies present in **OSCILLATOR 1** and **OSCILLATOR 2**. The **RING MODULATOR** creates a signal that is rich with harmonic and inharmonic tones.

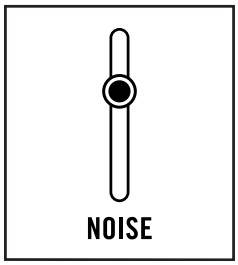
MUSE MODULES *(Cont.)*



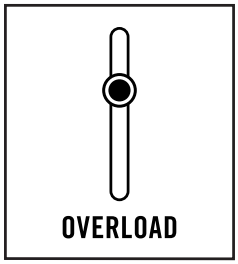
OSC 2
Controls the volume of **OSCILLATOR 2** in the **MIXER**.



MOD OSC
Controls the volume of the **MODULATION OSCILLATOR** in the **MIXER** – allowing you to create patches with 3 analog audio oscillators when using the **MODULATION OSCILLATOR** at audio rate. At low frequencies the **MODULATION OSCILLATOR** modulates the DC offset of the audio going into the **MIXER**, which can lead to interesting effects when the signals in the **MIXER** clip.



NOISE
Controls the volume of the white **NOISE** generator in the **MIXER**.



OVERLOAD
Global control that applies to the other 5 levels set by the faders in the **MIXER** section. It overdrives the mix, adding warm asymmetric saturation like the classic Moog CP-3 mixer from the 1960's and emphasizing even harmonics. The LED next to **OVERLOAD** will show the amount of clipping output from the **MIXER**. With **OVERLOAD** set to full strength, signals can still be mixed cleanly by setting channel faders to around halfway up their travel.

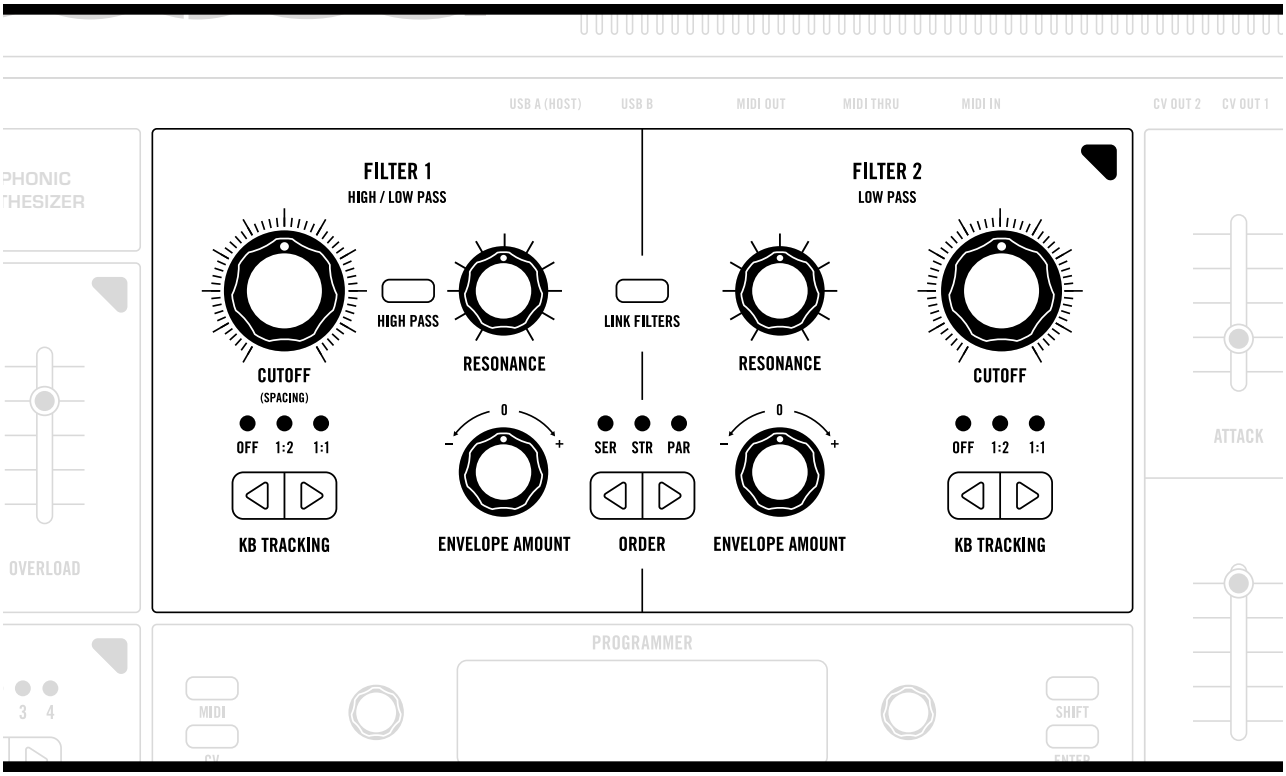
MIXER MORE MENU

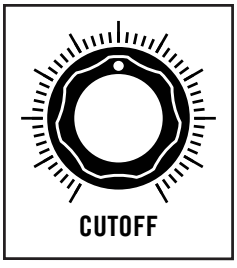
OVERLOAD RANGE (LOW, HIGH. DEFAULT: LOW)
Selects a range for the mixer **OVERLOAD** slider. LOW reduces the overall range of mixer drive for more precise control.

MUSE MODULES *(Cont.)*

FILTERS

FILTERS 1 and **2** are the main source of timbral shaping on Muse, allowing you to remove selected harmonics from the signal before reaching the VCA. Both filters are discrete Moog transistor ladder filters with **FILTER 1** able to operate as either a lowpass or highpass filter while **FILTER 2** is a dedicated lowpass filter. Each **FILTER** features independent control of cutoff frequency, resonance, envelope amount, and keyboard tracking. The mirrored controls for each **FILTER** will be described once, but the functionality applies to both **FILTERS**.

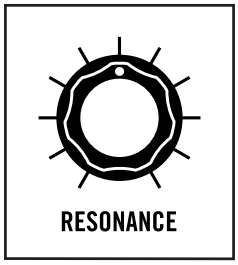




CUTOFF
Sets the cutoff frequency of the **FILTER**, determining which harmonics are removed from the signal path. A lowpass filter will remove all frequencies above the **CUTOFF** while a highpass filter will remove all frequencies below the **CUTOFF**.

HIGH PASS
Sets **FILTER 1** to be a highpass filter, filtering out all frequencies below the **CUTOFF** setting.

MUSE MODULES *(Cont.)*



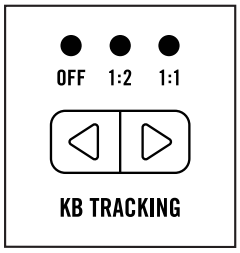
RESONANCE
Emphasizes the **CUTOFF** frequency of the **FILTER** by feeding the output of the **FILTER** back to its input - creating a resonant peak at the **CUTOFF** frequency. When turned fully clockwise the **RESONANCE** will reach a point of self-oscillation and generate a sine wave.

TIP: *When combined with keyboard tracking, setting* ***RESONANCE*** *fully clockwise allows you to use either filter as a sine wave oscillator.*

LINK FILTERS
Enables control of the **CUTOFF** frequency of both **FILTERS** from **FILTER 2**'s **CUTOFF** knob. When **LINK FILTERS** is engaged, adjusting the **CUTOFF** knob of **FILTER 1** will create an offset spacing between **FILTER 1** and **FILTER 2** while adjusting **FILTER 2**'s **CUTOFF** knob will move both **FILTERS** simultaneously. To set both **FILTERS** to the same setting while linked, set the **CUTOFF** knob of **FILTER 1** to noon.

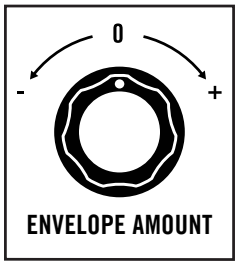
LINK FILTERS behavior depends on the **LINK MODE** selected in the MORE menu - see below.

NOTE: *Depending on filter modes and* ***ORDER****, this enables you to use one* ***CUTOFF*** *knob to control a stereo lowpass filter, a bandpass filter, or a notch filter.*

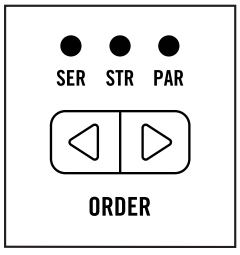


KB TRACK
Enables keyboard control of the **CUTOFF** frequency, allowing notes played higher on the keyboard to have a brighter sound. 1:2 provides half the amount of keyboard tracking while 1:1 provides full keyboard tracking, allowing you to "play the filter" with the keyboard.

TIP: *KB tracking amounts other than 1:2 and 1:1 can be programmed via the* ***MOD MAP****.*



ENVELOPE AMOUNT
Routes the **FILTER ENVELOPE** to modulate the **CUTOFF** frequency of the **FILTER**. **ENVELOPE AMOUNT** is a bipolar control allowing for positive or negative modulation of the **FILTER CUTOFF**.



ORDER
Configures how the audio signal from the **MIXER** is routed through the two **FILTERS**.

- **SERIAL**
  Signal is routed through **FILTER 1** first and **FILTER 2** afterwards.
- **STEREO**
  Signal is routed to both **FILTER 1** and **FILTER 2** simultaneously and each **FILTER** is hard panned to either side of the stereo field (**FILTER 1** on the left side and **FILTER 2** on the right side).

MUSE MODULES *(Cont.)*

- **PARALLEL**
  Signal is routed to both **FILTER 1** and **FILTER 2** simultaneously, and then the signal from both **FILTERS** is mixed together (in mono) before reaching the **VCA**.

  TIP: *With **ORDER** set to **SERIAL** and **FILTER 1** set to **HIGH PASS**, a bandpass filter will result.*
  *With **ORDER** set to **STEREO** and both filters as **LOW PASS**, a stereo lowpass filter will result.*
  *With **ORDER** set to **PARALLEL** and **FILTER 1** set to **HIGH PASS**, a notch filter will result.*

FILTER MORE MENU

LINK MODE (CUTOFF, INV CUTOFF, ALL KNOBS. DEFAULT: CUTOFF)
Selects how FILTER 2 controls affect FILTER 1 when LINK FILTERS is active.

- **CUTOFF**
  Standard behavior described in **LINK FILTERS**. **FILTER 1 CUTOFF** sets spacing between **FILTER 1 + 2 CUTOFF** (equal at noon). Moving **FILTER 2 CUTOFF** moves both filters together.

- **INV CUTOFF**
  FILTER 1 CUTOFF sets spacing between **FILTER 1 + 2 CUTOFF** (equal at noon). Moving **FILTER 2 CUTOFF** will move **FILTER 1** in opposite direction.

- **ALL KNOBS**
  Similar to **CUTOFF** mode but **FILTER 1 RESONANCE** and **ENVELOPE AMOUNT** knobs are now also spacing controls and respective **FILTER 2** controls move those parameters simultaneously.

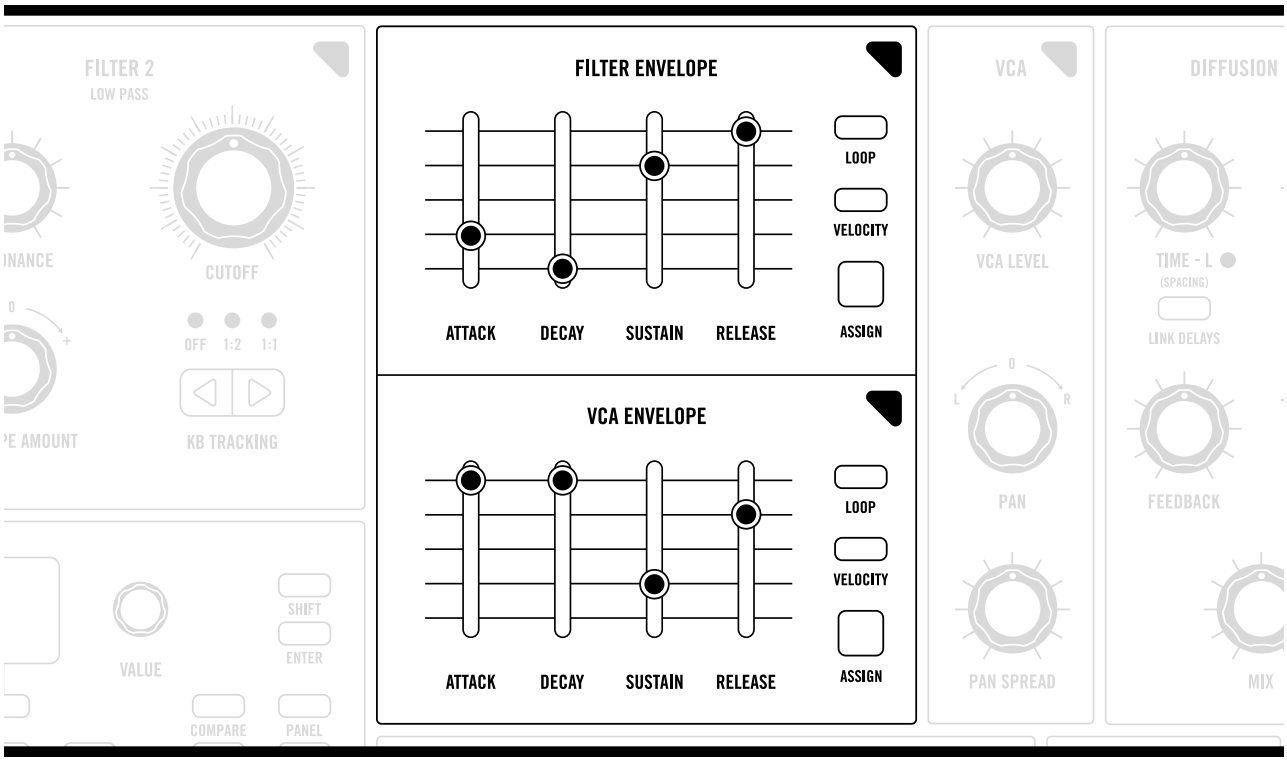
MUSE MODULES *(Cont.)*

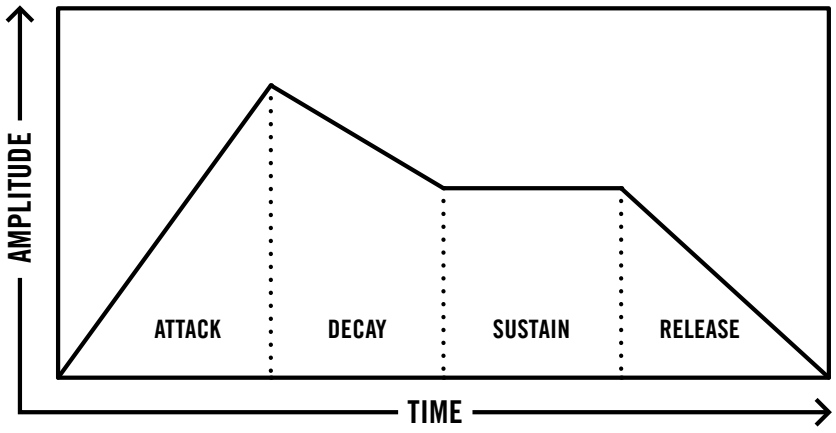
ENVELOPES

An **ENVELOPE** is a versatile modulation source that gives structure to a sound over time. Muse features two **ENVELOPE** generators per voice: the **FILTER ENVELOPE** which is normalized to control the **FILTER CUTOFF** and the **VCA ENVELOPE** which is normalized to control the Voltage-Controlled Amplifier (**VCA**) level. Both **ENVELOPES** are classic Attack, Decay, Sustain, Release (**ADSR**) envelopes whose shape over time are controlled by each parameters' respective faders and respond to gate information coming from the keyboard. Muse's **ENVELOPES** are especially flexible in that users can individually adjust the curve of the **ATTACK**, **DECAY**, and **RELEASE** timing stages from fully exponential, to linear, to fully logarithmic, allowing for deep customization of envelope shape to cater to any sound design need.

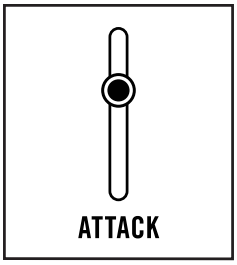
Both the **FILTER ENVELOPE** and **VCA ENVELOPE** are identical, so the following controls apply to both.

Muse also contains two global envelopes G EG 1, G EG 2 which have all the parameters of the main envelopes and are assignable via the **MOD MAP**. Pressing the G MOD EDIT soft button in the **FILTER/VCA ENVELOPE MORE** menu enables editing of G EG 1/2 respectively.

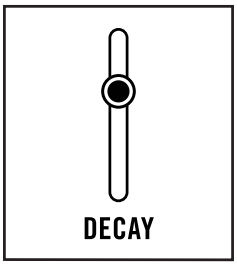




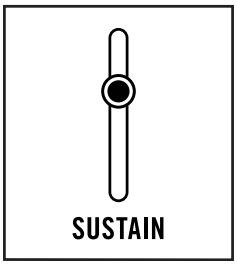
MUSE MODULES *(Cont.)*



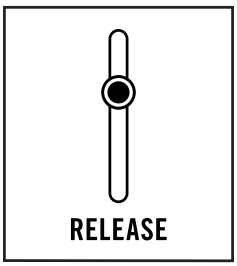
ATTACK
Sets the length of time it takes for the **ENVELOPE** to rise from its current value (zero if at rest) to its maximum value.



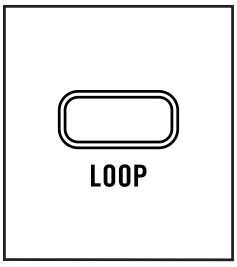
DECAY
Sets the length of time it takes for the **ENVELOPE** to fall from its maximum value to the level set by the **SUSTAIN** slider while a key is held.



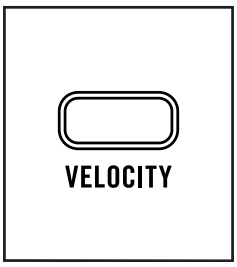
SUSTAIN
Sets the level the **ENVELOPE** settles to after the **DECAY** stage and the level the envelope sustains at while a key is held down.



RELEASE
Sets the length of time it takes for the **ENVELOPE** to fall from its current value to zero after a key is released.

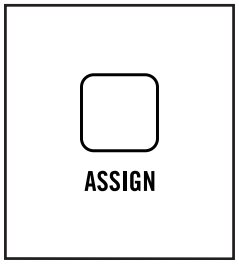


LOOP
Engages a cyclical behavior that allows the **ENVELOPE** to function similarly to an **LFO**. With the **LOOP** button **ON**, the **ENVELOPE** will move through its stages and at the end of **RELEASE** stage the **ATTACK** stage will re-trigger automatically.



VELOCITY
Engages dynamic amplitude control of the **ENVELOPE** via the **VELOCITY** of a key press – resulting in envelopes with larger amplitude when a key is pressed harder and lower amplitudes when a key is pressed softly.

MUSE MODULES *(Cont.)*



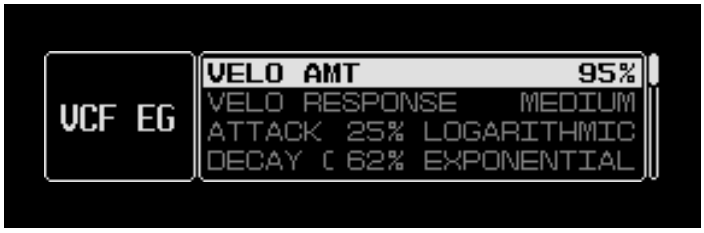
ASSIGN
Allows you to assign the **ENVELOPE** to modulate a panel control - opening the quick assign page and creating a slot in the **MOD MAP**. Press **ASSIGN** and turn the knob associated with the desired modulation destination - the knob being turned will then set the depth of modulation applied to that destination. Press **ENTER** to confirm the routing.

NOTE: *Any modulation routing can be further edited in the* ***MOD MAP*** *menu – see the* ***MOD MAP*** *section.*

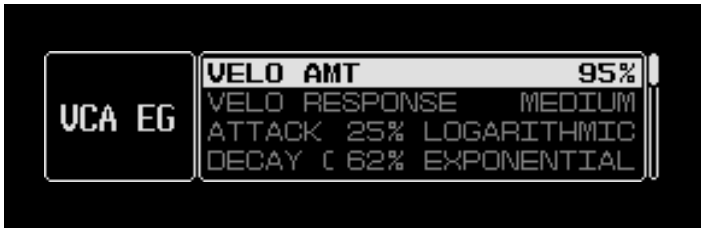
ENVELOPES MORE MENU

(SOFT BUTTON) G MOD EDIT
Muse contains two global envelopes for modulating global modulation destinations. These envelopes are edited with the same panel controls and **MORE** menu as editing the normal envelopes - engaging G MOD EDIT will set the triangular **MORE** button flashing indicating you are editing the global envelope. **FILTER ENVELOPE** panel controls and MORE menu options affect G EG 1, **VCA ENVELOPE** panel controls and **MORE** menu options affect G EG 2. Each global envelope has a variable trigger source, is multi-trig by default, and is shared between both timbres of a patch.

VELO AMT
Scales the effect **VELOCITY** has on the envelope amplitude when enabled while determining the minimum amplitude you can hit with velocity. Set to 100%, **VELOCITY** has a profound effect and allows you to hit very quiet notes. As **VELO AMT** is lowered the minimum amplitude increases and the velocity curve is rescaled, making the overall velocity effect less pronounced.



VELO RESPONSE (SOFT/MEDIUM/HARD. *DEFAULT: MEDIUM)*
Selects the velocity curve used in response to your playing. **SOFT** is a compressed velocity curve for those with a softer playing style, while **HARD** is more exaggerated so that it is easier to achieve softer velocities with a harder playing style. **MEDIUM** is somewhere in between.



ATTACK CURVE
Selects a curve for the **ENVELOPE ATTACK** stage - ranging from 100% logarithmic, through linear, to 100% exponential.

DECAY CURVE
Selects a curve for the **ENVELOPE DECAY** stage - ranging from 100% logarithmic, through linear, to 100% exponential.

RELEASE CURVE
Selects a curve for the **ENVELOPE RELEASE** stage - ranging from 100% logarithmic, through linear, to 100% exponential.

NOTE: *The default Attack/Decay/Release curves are modeled to fit the curves of the analog envelope generators used in the Moog 911 modules and in Grandmother/Matriarch.*

MUSE MODULES *(Cont.)*

VOICE STEAL MODE (RESET, FROM RELEASE. *DEFAULT: FROM RELEASE)*
Selects how the envelope reacts when the voice count forces a voice steal. **RESET** allows the envelope's attack stage to start from zero when stealing a voice. **FROM RELEASE** allows the envelope's attack stage to start from the stolen voice's current release level.

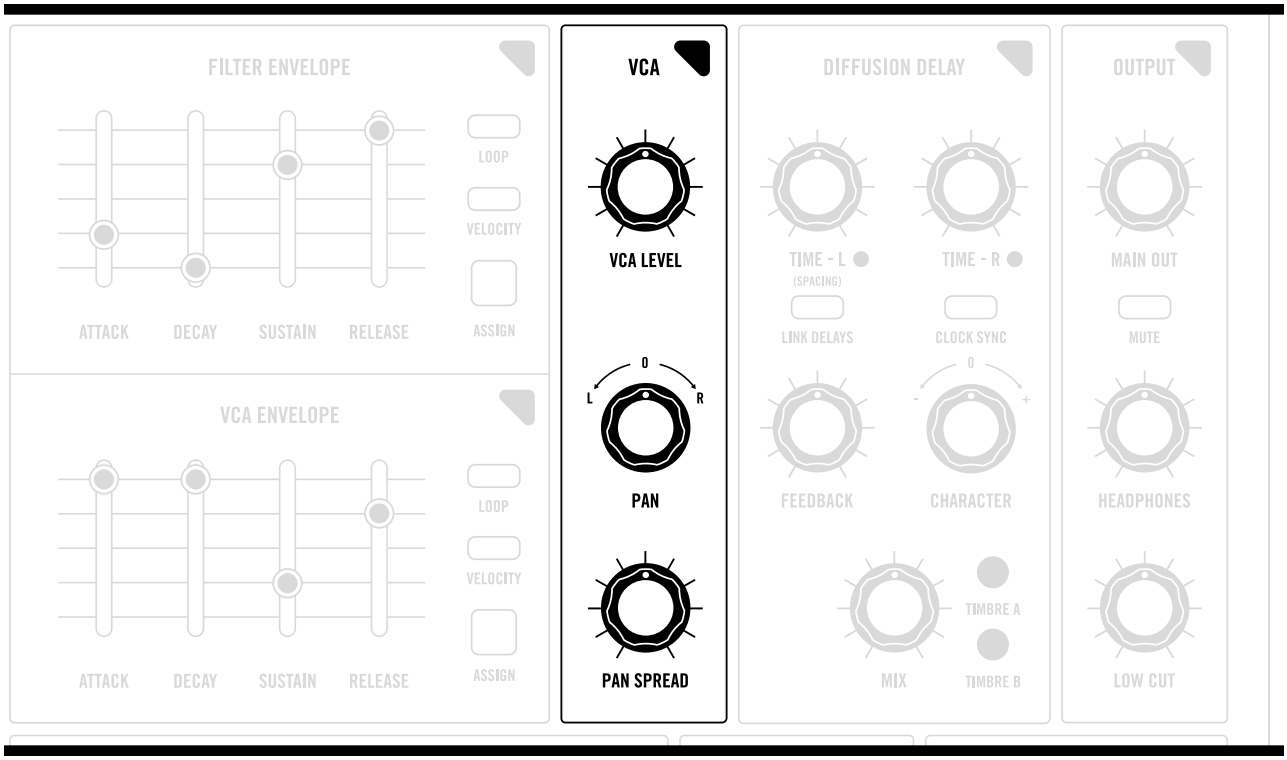
MULTITRIG (OFF, ON. *DEFAULT: OFF)*
Enables **MULTITRIG** functionality for the envelope generator when operating Muse in either **UNISON** or **MONO** mode. With **MULTITRIG ON**, the envelope generator will retrigger each time a new key is played. With **MULTITRIG OFF**, a new key press will only trigger the envelope if no other keys are held. Legato playing will not retrigger the envelope. This is the standard behavior of classic monosynths like the Minimoog Model D.

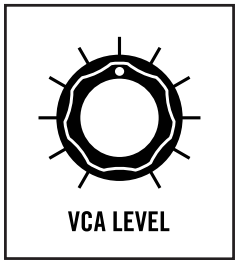
TRIG SOURCE (A, B)
Only an option in G EG 1/2 MORE menus. Sets the trigger source for G EG 1/2 - either TIMBRE A or B.

MUSE MODULES *(Cont.)*

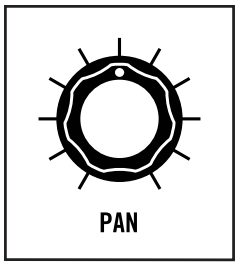
VCA

The Voltage-Controlled Amplifier (**VCA**) section allows for amplitude articulation on Muse and is controlled by default by the **VCA ENVELOPE**.



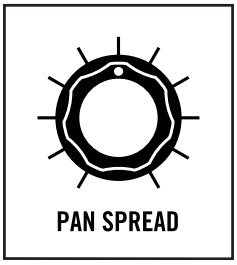


VCA LEVEL
Volume control for the currently active timbre (A/B) before it reaches the voice summing busses (and therefore before the **DIFFUSION DELAY**).



PAN
Bipolar control for manual adjustment of the pan-position of the currently active timbre (A/B) in the stereo field, allowing for binaural stereo effects in bi-timbral patches by hard panning each timbre to opposite sides of the stereo field.

MUSE MODULES *(Cont.)*



PAN SPREAD
Spreads allocated voices apart giving a wider feel to the stereo image. Muse features 2 distinctive styles of **PAN SPREAD** configurable in the **MORE** menu: **L/R** and **EVEN**. With **PAN SPREAD** set fully counterclockwise, all voices will always play in the same position in the stereo field based on the **PAN** knob setting. When turned clockwise one of two things will happen:

- **L/R Mode**
  Each new allocated voice will be hard-panned left and right in an alternating fashion with the distance of panning away from center set by **PAN SPREAD**.

- **EVEN Mode**
  All 8 voices will be spread evenly from left to right across the stereo field with the width of stereo voice spread from left to right set by **PAN SPREAD**.

TIP: PAN SPREAD *can allow for some particularly interesting binaural modulation behaviors when used with the* ***LFO PHASE SPREAD*** *option in the* ***VCA MORE MENU****. The* ***VCA****'s* ***MORE*** *menu additionally contains further options for governing* ***PAN SPREAD*** *distribution in the stereo field.*

VCA MORE MENU

ENV AMT
Determines the depth of **VCA** modulation from the **VCA ENVELOPE**. The default is 100%, but this setting allows you to reduce (or fully defeat) modulation from the **VCA ENVELOPE**.

OFFSET
Adds an offset to the **VCA** (from 0% to 100% such that the **VCA** is open by some amount even when no notes are being played, causing all voices to drone. Adding an **OFFSET** will simultaneously reduce the **ENV AMOUNT** (as the amplifier cannot open more than 100%).

PAN SPRD RAND (ON, OFF. DEFAULT: OFF)
Allows the **PAN SPREAD** knob to randomly place voices in the stereo field with each new voice allocation. Behavior when enabled depends on the **PAN SPRD MODE** setting below:

- **L/R**
  Randomly allocates between center and either left or right – depending on where that note would have been allocated to. Two back-to-back notes will not fall on the same sides – voices will still alternate.

- **EVEN**
  Randomly allocated between center and the position the note would have been allocated to if **PAN SPRD RAND** were disabled.

MUSE MODULES *(Cont.)*

PAN SPRD MODE - (L/R, EVEN. *DEFAULT: L/R)*
Selects whether the **PAN SPREAD** knob will place each of Muse's eight voices in a dedicated fixed position in the stereo field from left to right. When set to **L/R** (default), **PAN SPREAD** functions by allocating voices left and right in an alternating fashion. The level of panning is controlled by the **PAN SPREAD** knob, with a fully counterclockwise position resulting in all voices being centered, while a fully clockwise position will hard-pan voices. When set to **EVEN**, all voices will be assigned a fixed position in the stereo field spread evenly from left to right. The width of that spread is controlled by the **PAN** knob setting, with a fully counterclockwise position resulting in all voices being centered, while a fully clockwise position will spread all 8 voices as wide as they can go.

***TIP:** This setting can be useful in tandem with the **ARPEGGIATOR** or **SEQUENCER** to achieve repeatable patterned movement that cascades across the stereo field. When **PAN SPREAD RANDOMIZE** is on, each voice will be randomly distributed between the **PAN** knob setting and its fixed stereo position.*

LFO PHASE SPRD - (ON, OFF. *DEFAULT: ON)*
Enables **LFO** phase differentiation between voices playing on either side of the stereo field for immersive stereo modulation effects. With this setting **ON**, when the **PAN SPREAD** knob is increased **LFO** modulation for voices allocated to the left side will maintain their current phase setting while **LFO** modulation for voices allocated to the right side will be shifted out of phase. A 100% **PAN SPREAD** setting will yield a 180-degree phase shift between **LFO** modulation on the left and right sides of the stereo field. This means that any rising modulation will be falling on the opposite side and vice versa, leading to interesting binaural movement.

***TIP:** With **PAN SPREAD MODE** set to **EVEN**, **LFO** phase will be spaced evenly apart for each voice according to its position in the stereo field - resulting in an octature **LFO** effect.*

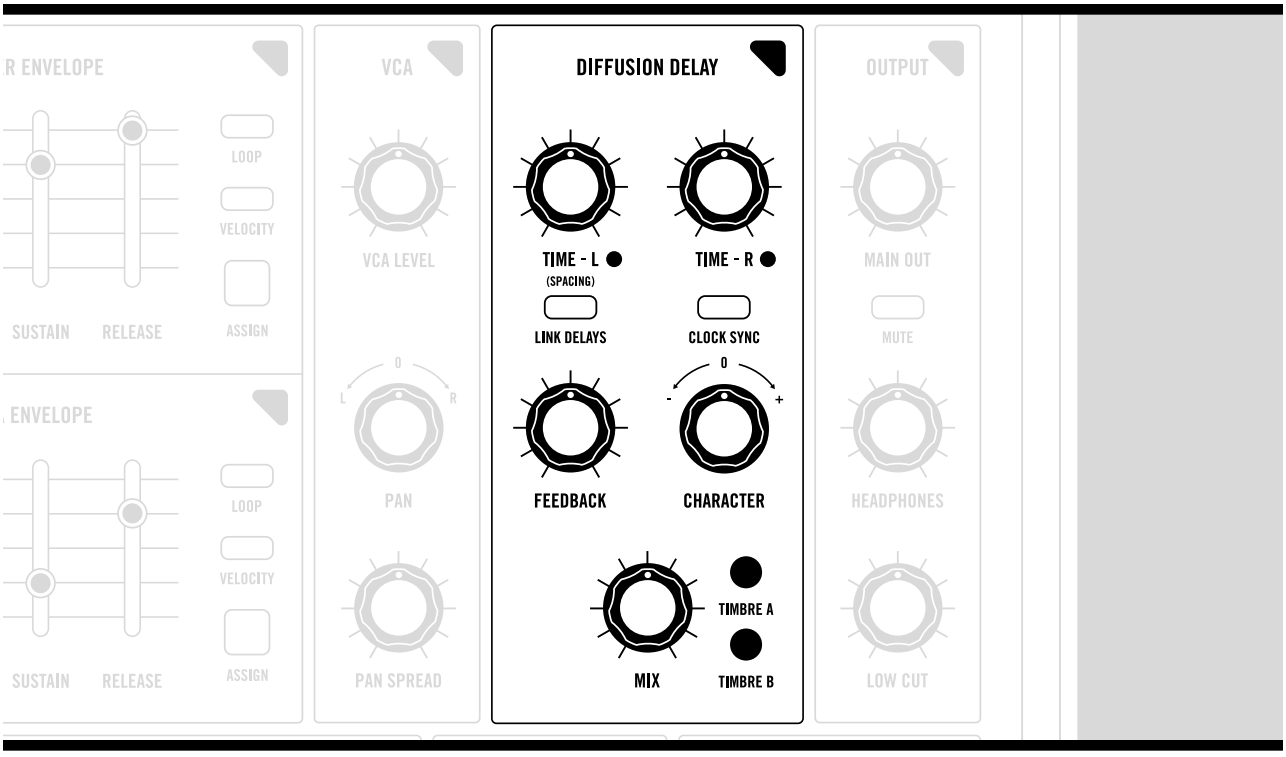
MUSE MODULES *(Cont.)*

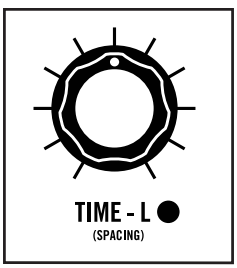
DIFFUSION DELAY

The **DIFFUSION DELAY** is a powerful stereo signal processor inspired by the sonic character of vintage digital rack units. It is highly configurable and can be catered to a user's needs. Whether it's providing stereo delays with ping pong behavior, filtered multi-tap tape echo-style delays, or reverb -like dreamy chorused-diffusion trails, Muse's **DIFFUSION DELAY** is a sonic playground for time-based effects.

Delay times can be synced to the global tempo for musically related divisions or multiplications, and the left and right delay channels can be offset from each other for immersive stereo effects. The **CHARACTER** knob and its extensive **MORE** menu settings can provide numerous ways of configuring the filtering, tap behavior, and diffusion of the delayed signals individually or in combination. Each of Muse's two **TIMBRES** can be routed to (or bypass completely) the digital **DIFFUSION DELAY** processor – preserving the completely analog audio signal path of Muse if the user so desires.

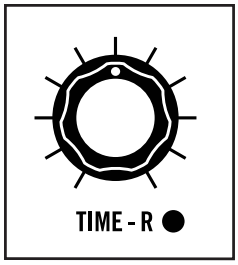
Practically every parameter of the **DIFFUSION DELAY** may be modulated via the **MOD MAP** but may only be modulated by one of the global modulation sources (global LFOs, EGs, or RAND TRIGs).





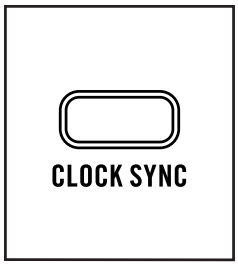
TIME-L
Sets the initial delay on the left channel of the **DIFFUSION DELAY**.

MUSE MODULES *(Cont.)*

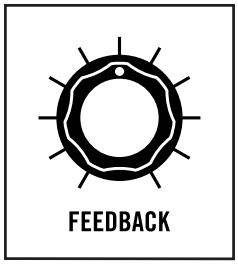


TIME-R
Sets the initial delay on the right channel of the **DIFFUSION DELAY**.

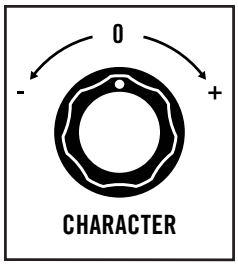
LINK DELAYS
Links both channels of the **DIFFUSION DELAY**, allowing you to control the delay times of both channels from the **TIME-R** knob. With **LINK DELAYS** engaged, adjusting the **TIME-L** knob will create a timing offset between the left and right channels, while adjusting **TIME-R** knob will move both channels equally in parallel.



CLOCK SYNC
Syncs both delay channels to the global **TEMPO**. Once engaged, both **TIME** knobs will only be able to jump between tempo divisions of the global **TEMPO**.

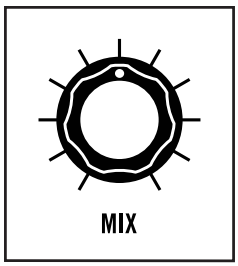


FEEDBACK
Routes a portion of the **DIFFUSION DELAY'S** output back to its input, building up multiple repeats and a cascade of delay trails. **FEEDBACK** is variable from single to infinite repeats and everything in between.



CHARACTER
Variable macro control whose function depends on the settings in the **MORE** menu and is saved per-patch. Can be used to control delay filtering, multi-tap behavior, and diffusion effects individually or in tandem. By default it acts as a combination "DJ style" lowpass/highpass filter for the delayed signal – with no filtering at 12' o'clock, increasing highpass filtering above noon, and increasing lowpass filtering below noon.

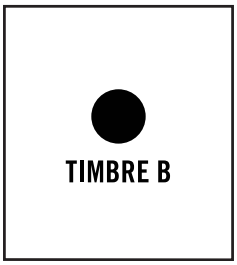
TIP: *Refer to the* ***MORE MENU*** *options below for an overview of the various functions the* ***CHARACTER*** *knob can perform.*



MIX
Crossfader to control the balance between Muse's dry signal and the output of the **DIFFUSION DELAY**. Fully counterclockwise, the **DIFFUSION DELAY** is completely bypassed at the output. Fully clockwise, only the **DIFFUSION DELAY** processed signal is present at the output.

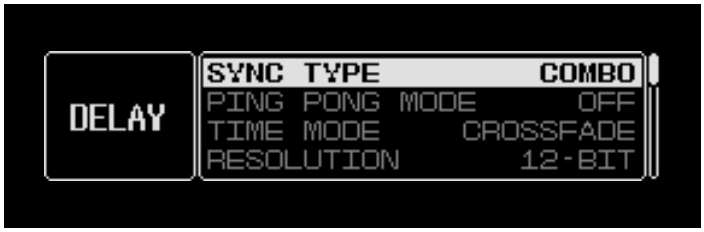
MUSE MODULES *(Cont.)*

TIMBRE A
Routes **TIMBRE A** to the **DIFFUSION DELAY** when engaged. **TIMBRE A** is fully bypassed for a completely analog signal when disengaged.



TIMBRE B
Routes **TIMBRE B** to the **DIFFUSION DELAY** when engaged. **TIMBRE B** is fully bypassed for a completely analog signal when disengaged.

DIFFUSION DELAY MORE MENU



SYNC TYPE (COMBO, STRGHT, TRIP, DOT. *DEFAULT: COMBO)*
Determines whether the **TIME** knobs can hit all clock divisions (**COMBO**), only straight divisions, only triplet divisions, or only dotted note divisions when **CLOCK SYNC** is enabled.

PING PONG MODE (ON, OFF. *DEFAULT: OFF)*
Enables a style of stereo ping pong delay in which each delay channel is placed in the feedback path of the other. This results in a delay feedback behavior that jumps back and forth between the left and right sides of the stereo field as the right delay's feedback is fed into the left delay, and then the left delay's feedback is fed into the right delay, and so on. The ability to set left and right delay **TIME** knobs independently allows for unique stereo ping pong rhythms.

TIME MODE (CROSSFADE, PITCH SHIFT. *DEFAULT: CROSSFADE)*
Selects between two different TIME knob behaviors: a crossfading mode that eliminates pitch artifacts when changing delay times or a pitch shifting mode similar to classic analog delay devices (such as the MF-104 Analog Delay).

RESOLUTION (12-BIT, 16-BIT. *DEFAULT: 12-BIT)*
The tone of **DIFFUSION DELAY** is inspired by classic early digital delays and allows users to select between a 12-bit mode (reminiscent of late 70's to early 80's delays) or 16-bit mode (reminiscent of late 80's and 90's delays).

CHRCTR FILTER (OFF, ON, INVERT. *DEFAULT: ON)*
Enables the **CHARACTER** knob to control filtering of the main delay tap based on the **CHARACTER FILTER TYPE** chosen below. **INVERT** allows you to flip the filtering behavior (e.g. with "DJ" filter type **INVERT** places the highpass filtering below noon and the lowpass filtering above noon).

MUSE MODULES *(Cont.)*

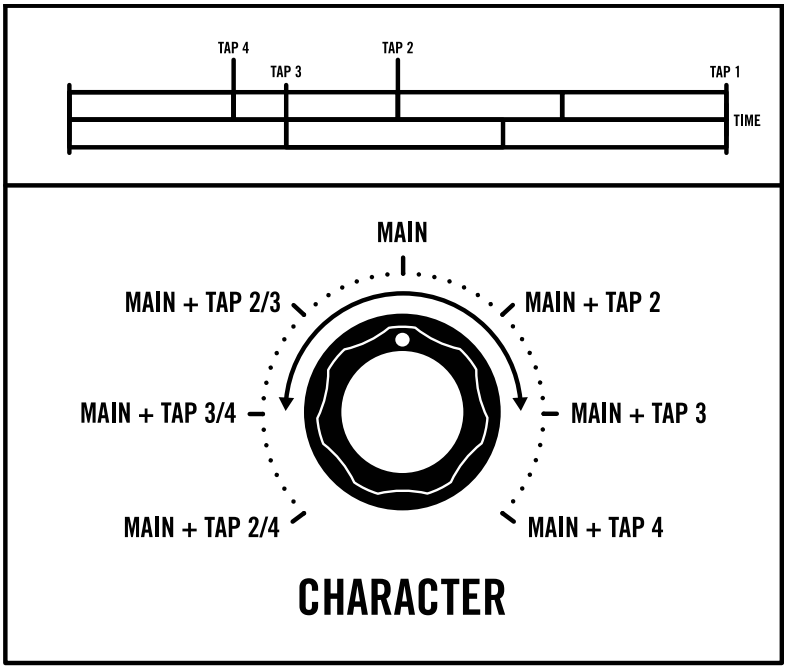
CHRCTR FILTER TYPE (DJ, TILT, BPF, NOTCH. *DEFAULT: DJ)*
Determines the type of filtering applied to the main delay tap if the **CHARACTER FILTER** setting is enabled (either **ON** or **INVERT**). The possible filter types are:

- **DJ** - DJ-style filter with a highpass filter above noon and lowpass filter below noon
- **TILT** - Tilt equalizer, boosting highs and cutting lows above noon while boosting lows and cutting highs below noon
- **BPF** - Resonant bandpass filter
- **NOTCH** - Notch (bandstop) filter with a wide notch

CHRCTR MULTI-TAP (OFF, ON, INVERT. *DEFAULT: OFF)*
Enables multi-tap delay behavior via the **CHARACTER** knob. Inspired by classic tape echo controls, each channel of the **DIFFUSION DELAY** uses a four-tap configuration. The main delay tap is controlled by the **TIME L/R** knobs, tap 2 plays at half the **TIME** setting, tap 3 plays at 1/3 the **TIME** setting, and tap 4 plays at 1/4 the **TIME** setting.

With **CHARACTER MULTI-TAP** set to **ON**, the **CHARACTER** knob will act in a bi-polar fashion.

- **Above noon** - tap 2 will be mixed in with the main tap, after which it will crossfade to tap 3, and then tap 4 at the fully clockwise position - allowing for a mixture of the main tap with tap 2, 3, or 4.
- **Center position** (noon) yields no additional taps.
- **Below noon -** a mixture of tap 2+3 will be mixed in with the main tap, after which it will crossfade to a mixture of tap 3+4, and then a mixture of taps 2+4 at the fully counter-clockwise position, allowing for a mixture of the main tap with a group of two of the other taps.



The **INVERT** setting flips this behavior placing the 3-tap mixtures above noon, and the 2-tap mixtures below noon. Note that it is not possible to mix all 4 taps at once.

CHRCTR DIFFUSE (OFF, ON, INVERT. *DEFAULT: OFF)*
Enables diffusion behavior in the delay via the **CHARACTER** knob. Diffusion occurs before the delay lines but is in the feedback path. Diffusion smears the sound using all-pass filter networks to achieve reverb type tones. Turning the **CHARACTER** knob above noon will yield standard diffusion, with the max diffusion depth at the fully clockwise position. Turning **CHARACTER** below noon will yield chorused diffusion, with the max chorused diffusion depth at the fully counterclockwise position. The **INVERT** setting will flip this behavior (chorused diffusion above noon, standard diffusion below noon).

CHRCTR DIFFUSE TIME (0.00 MS – 12.00 S. *DEFAULT: 6.00 S)*
Sets the diffusion time when diffusion is enabled – from zero milliseconds to 12 seconds.

MUSE MODULES *(Cont.)*

HPF (20 HZ – 500 HZ. *DEFAULT: 20 HZ)*
Controls the cutoff frequency of a fixed high-pass filter placed ahead of the delay lines but in the feedback path. Variable from 20 Hz to 500 Hz.

LPF (2 kHZ – 11.75 kHZ. *DEFAULT: 11.75 kHZ)*
Controls the cutoff frequency of a fixed low-pass filter placed ahead of the delay lines but in the feedback path. Variable from 2 kHz to 11.75 kHz

SEND (0 - 100%. DEFAULT 100%)
Sets the amount of signal sent to the DIFFUSION DELAY.

***TIP:** Set SEND to 0% and use a global modulation source such as the **MACRO** knob or G EG to expressively or dynamically send Muse's signal to the delay!*

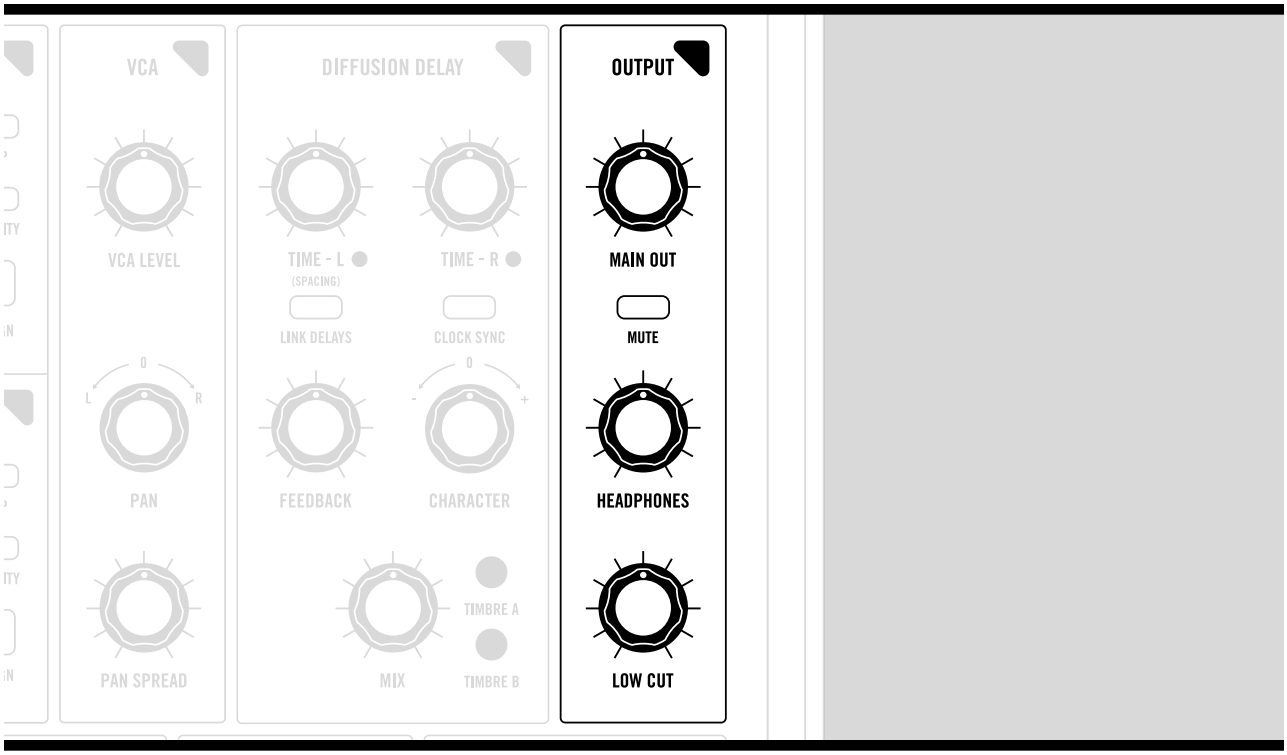
MAIN OUT MIX (ON, OFF. *DEFAULT: ON)*
Setting to enable (or disable) the **DIFFUSION DELAY** on the main output.

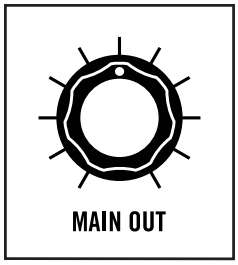
HEADPHONE MIX (ON, OFF. *DEFAULT: ON)*
Setting to enable (or disable) the **DIFFUSION DELAY** on the headphone output.

MUSE MODULES *(Cont.)*

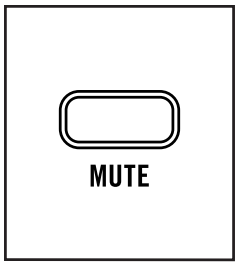
OUTPUT

The **OUTPUT** section controls the final output signal from Muse, providing dedicated **MAIN OUT** and **HEADPHONE** levels, a **MAIN OUT MUTE** button, and a **LOW CUT EQ** control.





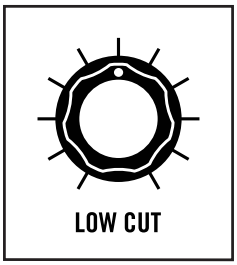
MAIN OUT
Sets the volume level of Muse's signal at the **MAIN OUT LEFT (MONO)** and **MAIN OUT RIGHT** output jacks.



MUTE
Clickless muting of Muse's **MAIN OUT** signal.

MUSE MODULES *(Cont.)*

HEADPHONES
Sets the volume level of Muse's signal at the **HEADPHONES** output jack (found on the front of Muse underneath the Left-Hand Controller).



LOW CUT
Global single-pole highpass filter for removing low frequency content from Muse's final output signal to aid with mixing. The setting of this knob is stored per patch.

OUTPUT MORE MENU

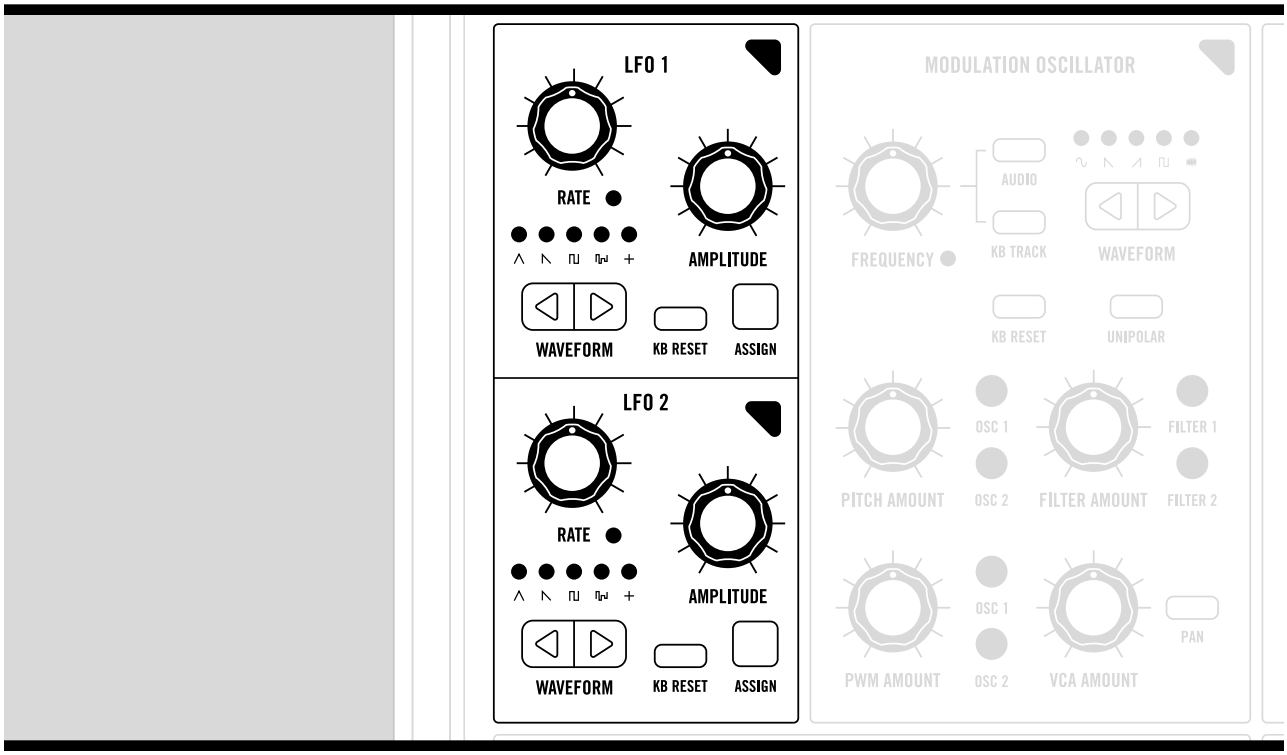
As of right now this module does not have any more menu settings, but we included a more menu in case that changes in the future. Please register your instrument at moogmusic.com to be notified of future firmware updates.

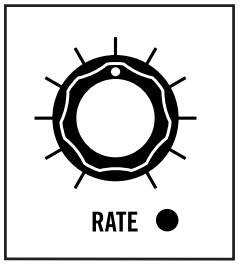
MUSE MODULES *(Cont.)*

LFO 1+2

LFOs 1 and **2** are two identical Low Frequency Oscillators (**LFO**). They allow for cyclic modulation to be applied to multiple destinations on Muse's panel via the **MOD MAP** and each has an **AMPLITUDE** control to scale the strength of modulation sent downstream to all assigned destinations. Both **LFO**s are highly configurable via their respective **MORE** menus with variable range settings for each, global or per-voice options, and a wide range of special user-selectable waveforms. The mirrored controls for each **LFO** will be described once, but the same functionality applies to both.

Muse also contains two global LFOs G LFO 1, G LFO 2 which have all the parameters of the main LFOs and are assignable via the **MOD MAP**. Pressing the G MOD EDIT soft button in the LFO 1/2 MORE menu enables editing of G LFO 1/2 respectively.

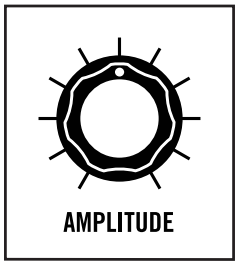




RATE
Controls the frequency of the **LFO**. The range of this knob defaults to 0.01 Hz–40.00 Hz but has a maximum range of 0.00 Hz – 1.00 kHz (configurable in **MORE** menu).

TIP: *Range settings in the **MORE** menu for **RATE** are saved on a per-patch basis, so you can dial in each **LFO**'s range to an appropriate one for better performance control!*

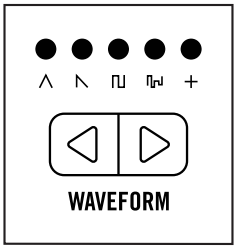
TIP: *When the waveform is set to **RANDOM**, the **RATE** knob can fully stop **LFO** movement when set to its minimum value. Use this in combination with **KB RESET** to create random modulation that only changes when new keys are pressed. This behavior is default when the **RANDOM** waveform selected but can be disabled in the **MORE** menu.*



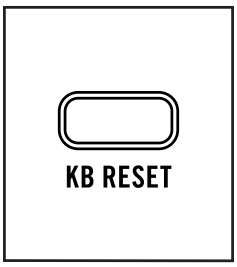
AMPLITUDE
Controls the global amplitude of the **LFO**, acting as an attenuator placed before any modulation destinations.

TIP: *If an **LFO** is used in the **MOD MAP** to modulate several destinations simultaneously at differing amounts in your patch, the **AMOUNT** knob will function as a macro and control the depth of all those modulation routings at once.*

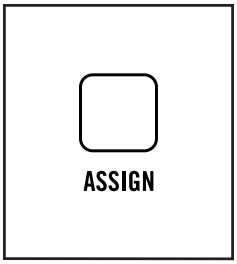
MUSE MODULES *(Cont.)*



WAVEFORM
Selects the wave shape of the **LFO**. The available shapes are **TRIANGLE, SAWTOOTH, SQUARE, RANDOM,** and a **USER** selectable shape (selectable via the **MORE** menu).

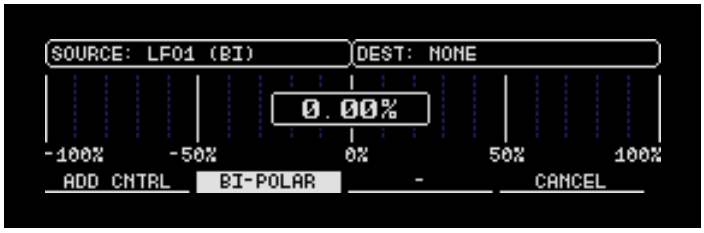


KB RESET
Resets the LFO to its starting point in its wave cycle every time a key is pressed, allowing for more predictable and repeatable modulation behavior.



ASSIGN
Allows you to assign the **LFO** to modulate a panel control - opening the quick assign page and creating a slot in the **MOD MAP**. Press **ASSIGN** and turn the knob associated with the desired modulation destination - the knob being turned will then set the depth of modulation applied to that destination. Press **ENTER** to confirm the routing.

NOTE: *Any modulation routing can be further edited in the* ***MOD MAP*** *menu – see the* ***MOD MAP*** *section.*



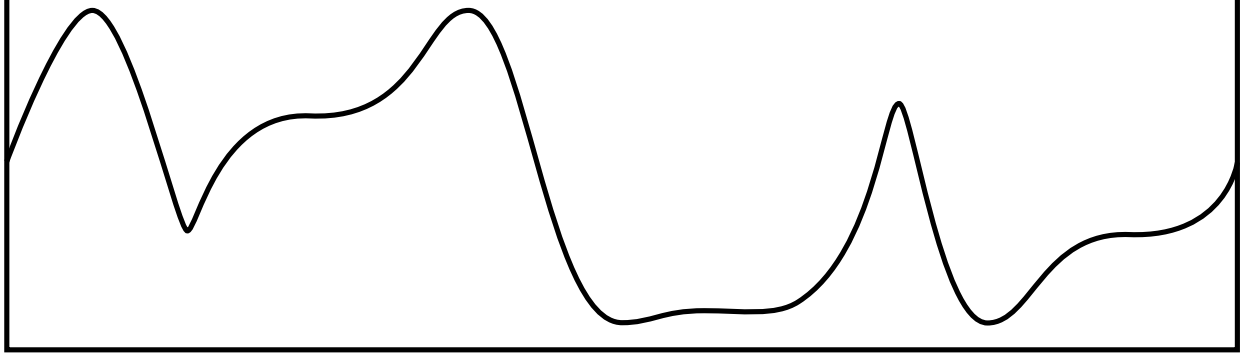
LFO 1+2 MORE MENU

(SOFT BUTTON) G MOD EDIT
Muse contains two global LFOs for modulating global modulation destinations. These envelopes are edited with the same panel controls and MORE menus as editing the normal LFOs - engaging G MOD EDIT will set the triangular MORE button flashing indicating you are editing the global LFO. LFO 1 panel controls and MORE menu options affect G LFO 1, LFO 2 panel controls and MORE menu options affect G LFO 2. Each global LFO is shared between both timbres of a patch.

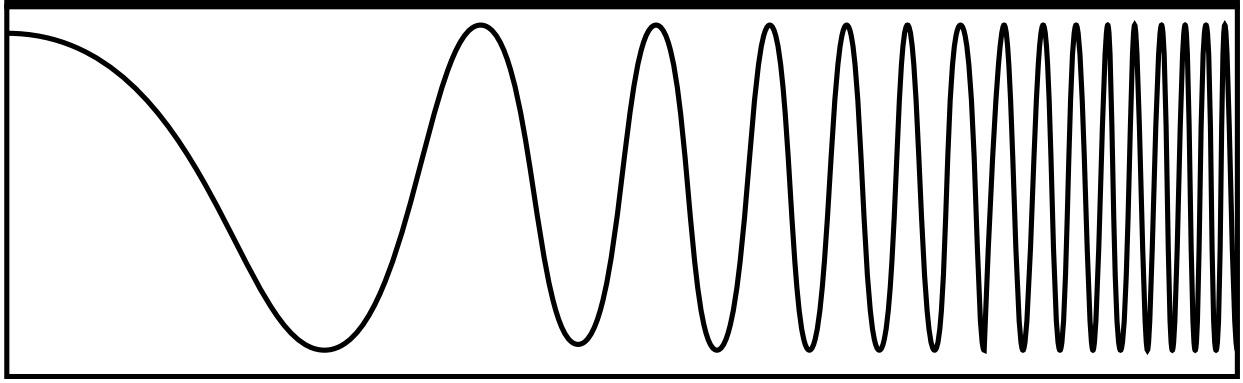
USER WAVE
Selects a custom waveform to occupy the 5th waveform position.

MUSE MODULES *(Cont.)*

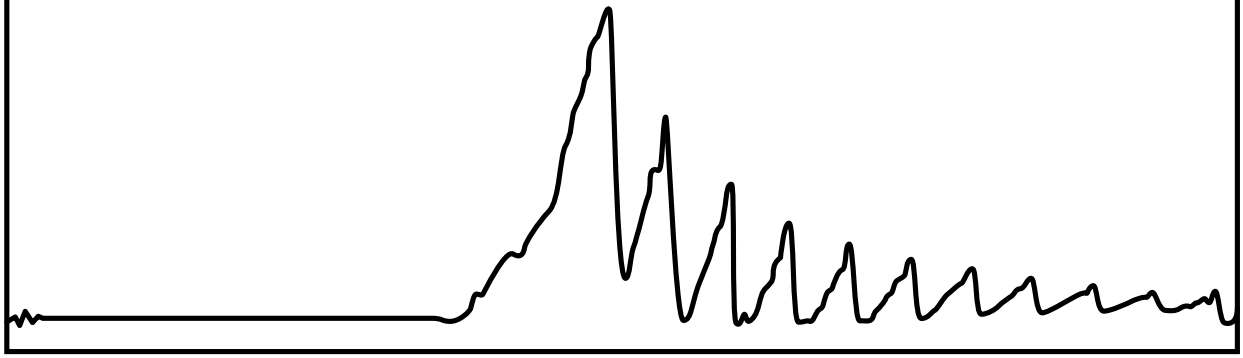
WAVEFORM: CHEBY



WAVEFORM: CHIRP

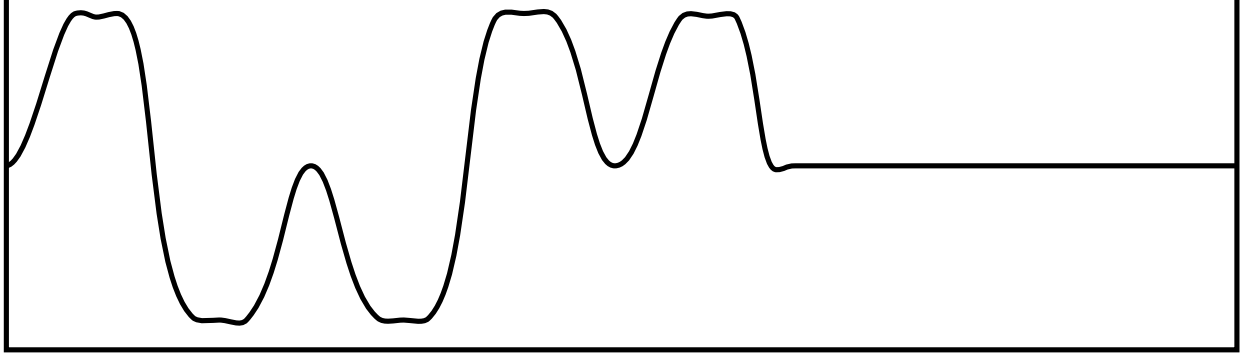


WAVEFORM: FAUX DLY

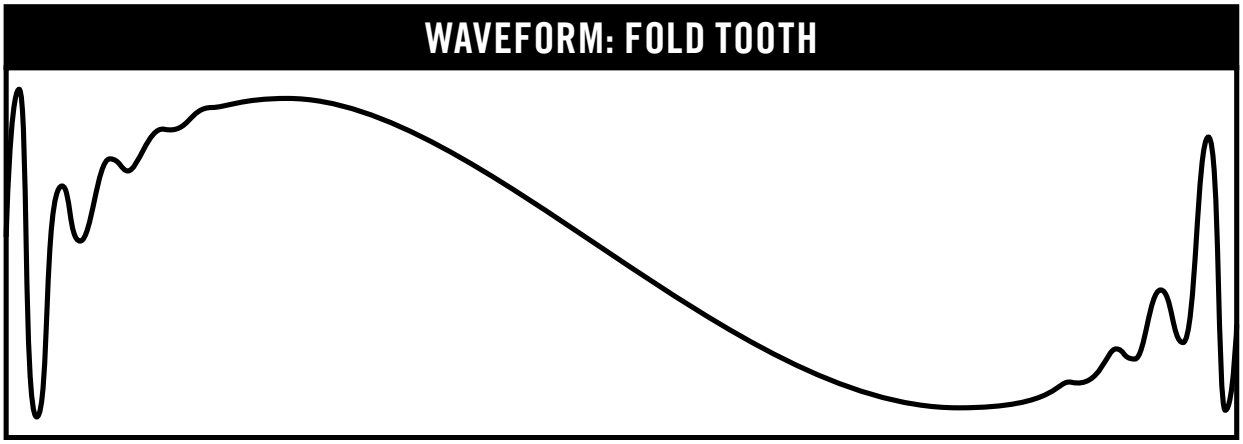


MUSE MODULES *(Cont.)*

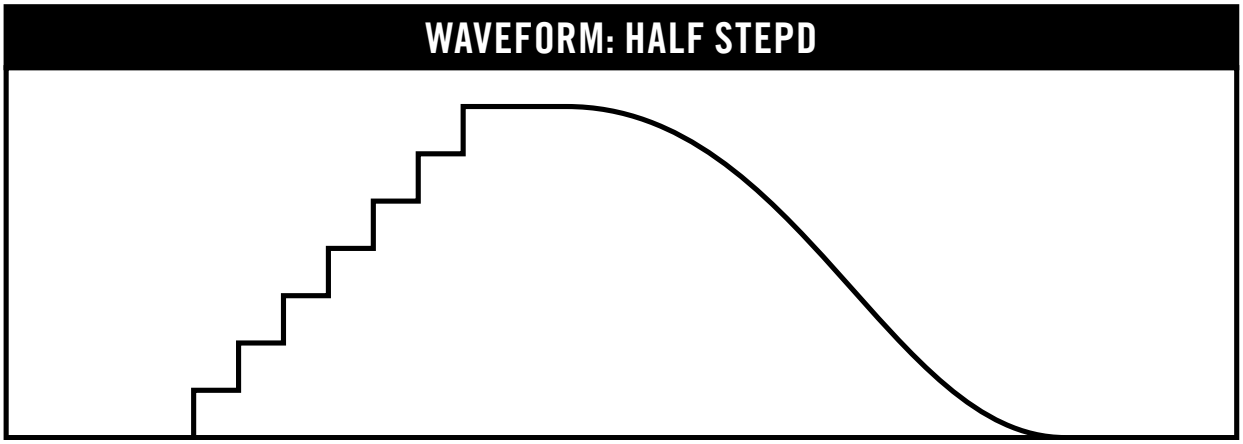
WAVEFORM: FOLD FLAT



WAVEFORM: FOLD TOOTH

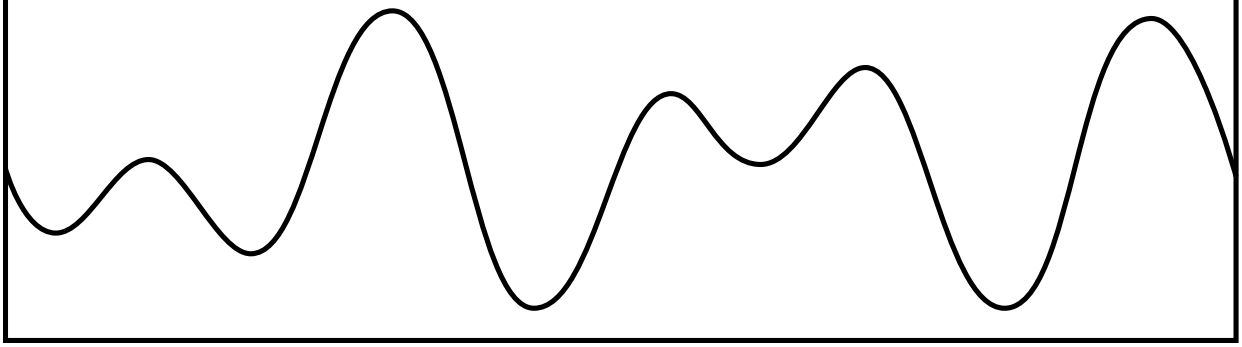


WAVEFORM: HALF STEPD

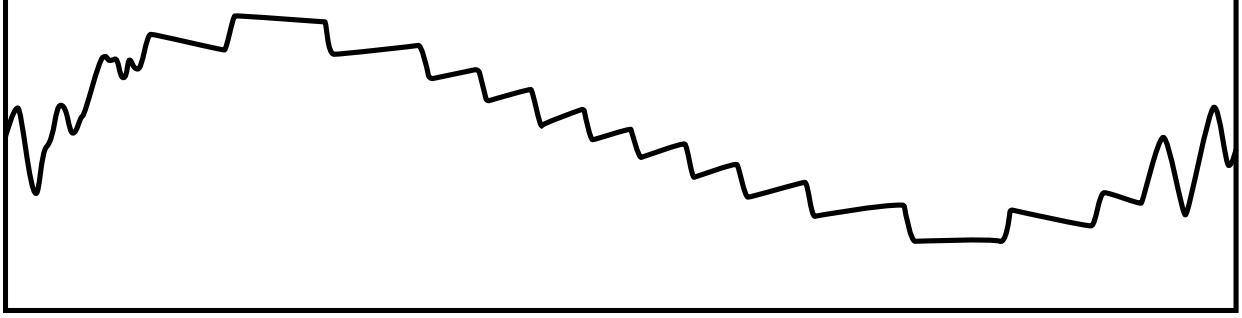


MUSE MODULES *(Cont.)*

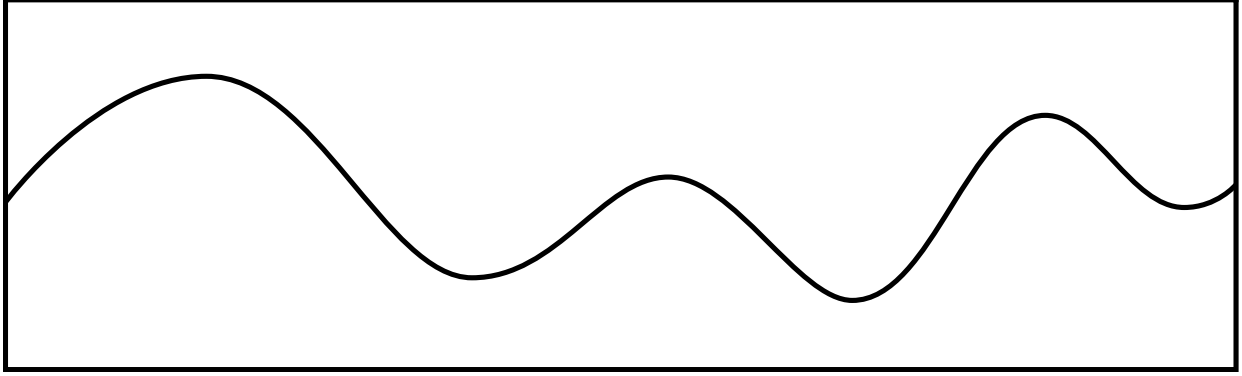
WAVEFORM: SEASICK

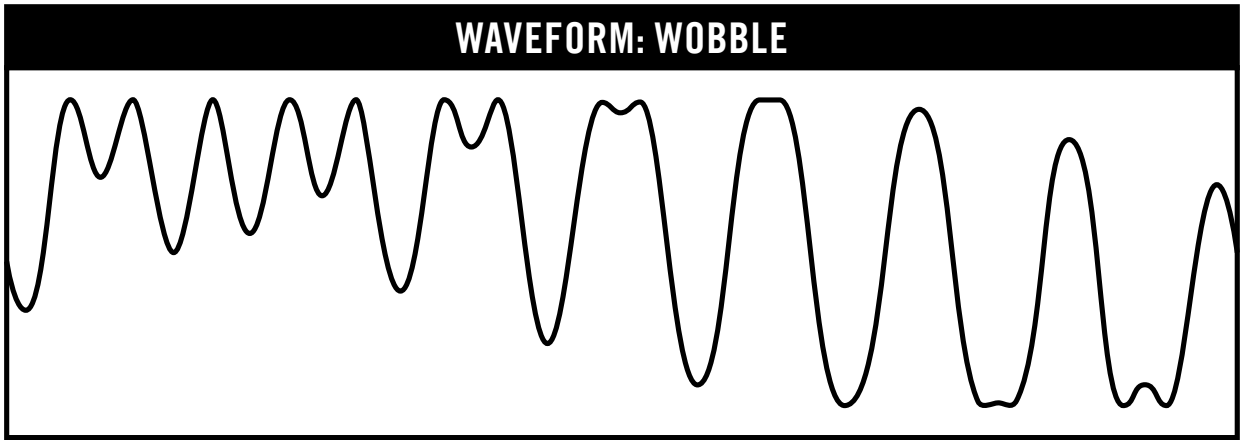


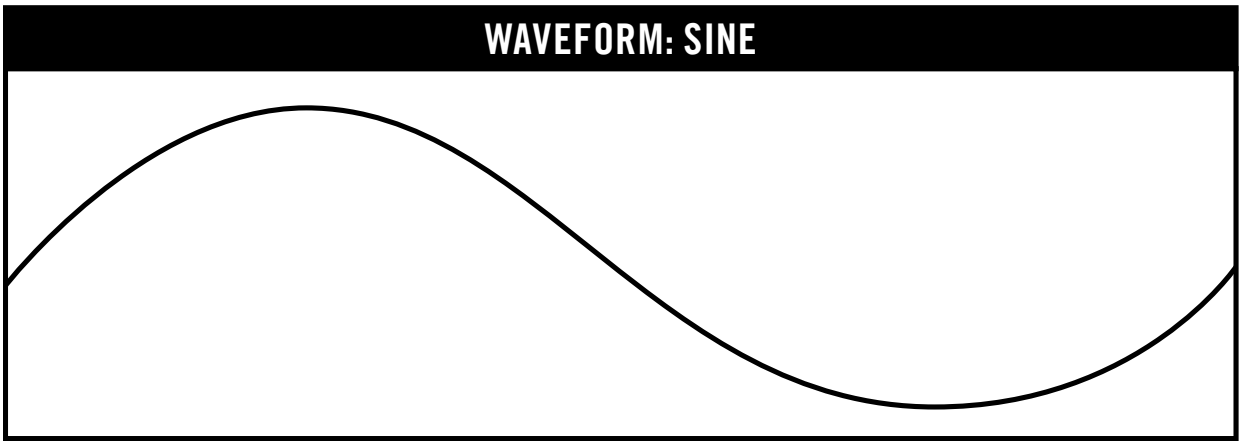
WAVEFORM: STEP STRETCH



WAVEFORM: TILT A WHIRL







LFO TYPE (GLOBAL, PER-VOICE. *DEFAULT: GLOBAL)*
Selects whether the **LFO** operates on a **GLOBAL** (one global **LFO** for entire **TIMBRE**) or **PER-VOICE** level (eight separate **LFO**s – one for each voice).

SYNC (ON, OFF. *DEFAULT: OFF)*
Syncs **LFO** to global **TEMPO** – restricting **RATE** to jump between multiplications and divisions of the **TEMPO**.

ENVELOPE MODE (ON, OFF. DEFAULT: OFF)
When enabled LFO functions as a one-shot - repeating once and then off until retriggered.

RESET ON SEQ START (ON, OFF. DEFAULT: OFF)
When enabled resets the LFO upon sequence start.

SYNC TYPE *(*COMBO, STRGHT, TRIP, DOT. *DEFAULT: COMBO)*
Determines whether the **RATE** knob can hit all clock divisions (**COMBO**), only straight divisions, only triplet divisions, or only dotted note divisions of the **TEMPO** when **SYNC** is enabled.

RATE MIN (0 Hz – 1.00 kHz. *DEFAULT: 0.01 Hz)*
Selects a lower limit for the setting of the **RATE** knob.

MUSE MODULES *(Cont.)*

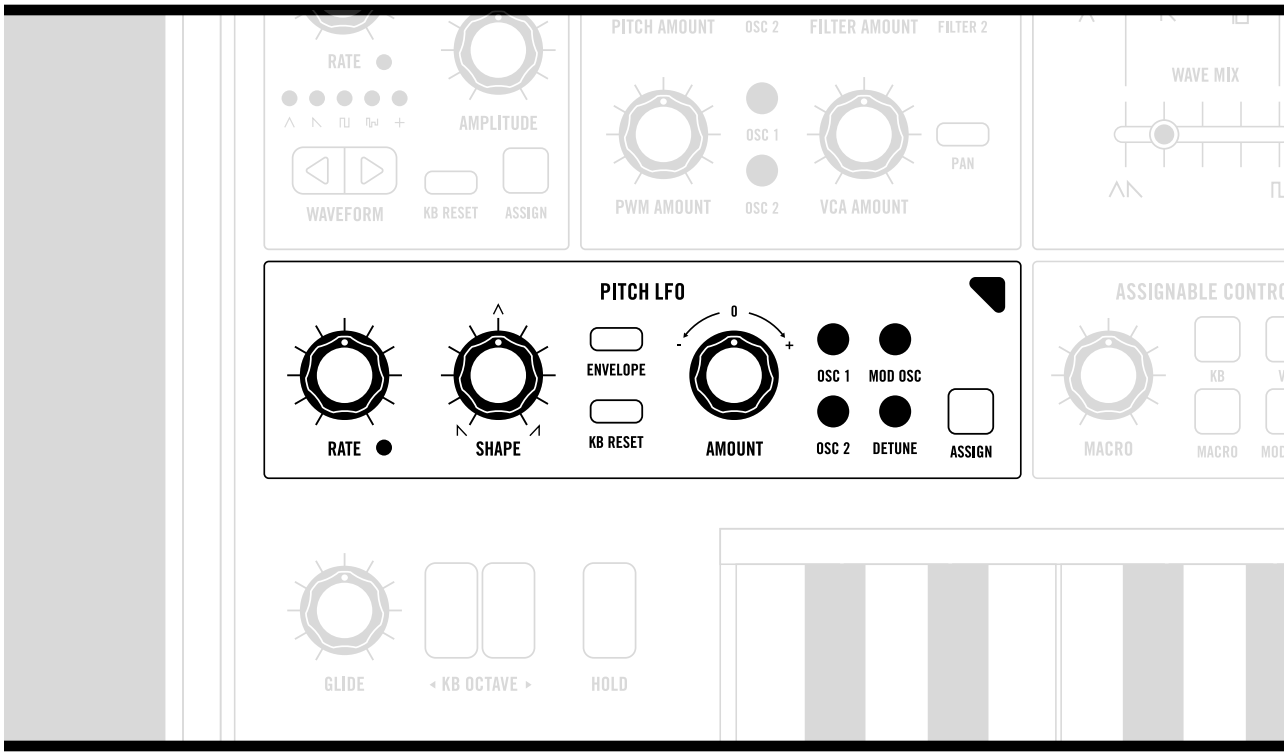
***TIP:** With a **RATE MIN** of 0 Hz you can effectively pause an **LFO**'s cycle. By using one **LFO** set to a square wave to modulate a different **LFO**'s rate so that the square wave pushes it to 0hz, you can achieve interesting **LFO** modulation that pauses at the bottom of the square wave while moving at the top of the square wave.*

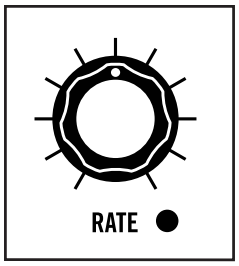
RATE MAX (0 Hz – 1.00 kHz. *DEFAULT: 40.00 Hz)*
Selects an upper limit for the setting of the RATE knob.

ASSIGN POLARITY (BI, UNI. *DEFAULT: BI)*
Selects whether the **LFO** defaults to UNIpolar or BIpolar polarity when using the **ASSIGN** button to create modulation routing.

PITCH LFO

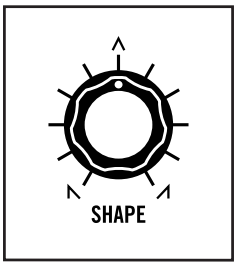
The **PITCH LFO** is a dedicated modulation source designed for use with Muse's Voltage-Controlled Oscillators (**OSCILLATOR**s **1** and **2** and the **MODULATION OSCILLATOR**). A variable-skew **LFO** from sawtooth through triangle to ramp, the **PITCH LFO** is specifically dialed in for subtle vibrato amounts and is capable of one-shot envelope behavior. It can also be routed via the **MOD MAP** to any other destination.



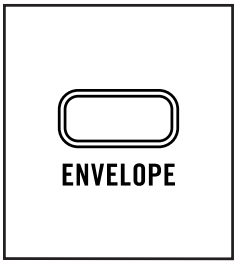


RATE
Control the frequency of the **PITCH LFO**. The range of this knob defaults to 0.01 Hz–40.00 Hz but has a maximum range of 0.00 Hz – 1.00 kHz (configurable via **MORE** menu).

MUSE MODULES *(Cont.)*

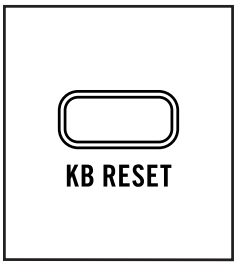


SHAPE
Bipolar control adjusting the angle of the **PITCH LFO**'s waveform. At noon the waveform is a symmetrical triangle wave. Adjusting **SHAPE** shifts the **TRIANGLE**'s rise and fall times, becoming a **SAWTOOTH** wave when fully counterclockwise and a **RAMP** wave when fully clockwise.

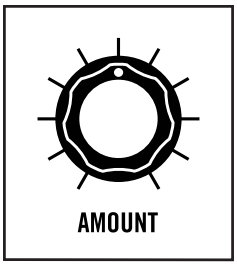


ENVELOPE
Enables a unipolar "one-shot" mode that is triggered every time a key is pressed. This allows the **PITCH LFO** to be used as an AD-style envelope, with the **SHAPE** knob adjusting **ATTACK** and **DECAY** times simultaneously.

NOTE: *This function ignores any polarity settings in the **MORE** menu and will always be unipolar.*

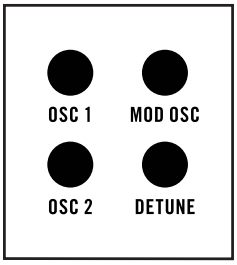


KB RESET
Resets the **PITCH LFO** to its starting point every time a key is pressed, allowing for more predictable and repeatable modulation behavior.



AMOUNT
Bipolar control over the depth of the **PITCH LFO**'s modulation of its hardwired destinations. When set to noon the **AMOUNT** knob will yield no modulation. Adjusting the knob clockwise from noon will result in positive modulation of the destination while adjusting the knob counterclockwise from noon will result in inverted modulation of the destination.

TIP: *The **PITCH LFO** is optimized for vibrato movement, and as such will result in +/- 2 semitone movement with **AMOUNT** turned to maximum (in positive or negative direction), allowing for very precise control over vibrato effects.*



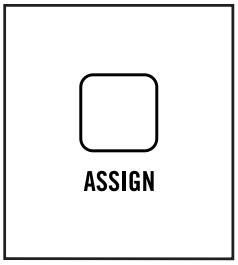
OSC 1
Routes the **PITCH LFO** to modulate **OSCILLATOR 1** when engaged.

OSC 2
Routes the **PITCH LFO** to modulate **OSCILLATOR 2** when engaged.

MOD OSC
Routes the **PITCH LFO** to modulate the **MODULATION OSCILLATOR** when engaged.

DETUNE
Routes the **PITCH LFO** to modulate the **DETUNE** knob in the **VOICE CONTROL** section when engaged.

MUSE MODULES *(Cont.)*



ASSIGN
Allows you to assign the **PITCH LFO** to modulate a panel control - opening the quick assign page and creating a slot in the **MOD MAP**. Press **ASSIGN** and turn the knob associated with the desired modulation destination - the knob being turned will then set the depth of modulation applied to that destination. Press **ENTER** to confirm the routing.

NOTE: *Any modulation routing can be further edited in the* ***MOD MAP*** *menu – see the* ***MOD MAP*** *section.*

PITCH LFO MORE MENU

LFO TYPE (GLOBAL, PER-VOICE. *DEFAULT: GLOBAL)*
Selects whether the **PITCH LFO** operates on a **GLOBAL** (one global **PITCH LFO** for entire **TIMBRE**) or **PER-VOICE** level (eight separate **PITCH LFO**s – one for each voice).

SYNC (ON, OFF. *DEFAULT: OFF)*
Syncs **PITCH LFO** to global **TEMPO** – restricting **RATE** to jump between multiplications and divisions of the **TEMPO**.

RESET ON SEQ START (ON, OFF. DEFAULT: OFF)
When enabled resets the PITCH LFO upon sequence start.

SYNC TYPE (COMBO, STRGHT, TRIP, DOT. *DEFAULT: COMBO)*
Determines whether the **RATE** knob can hit all clock divisions (**COMBO**), only straight divisions, only triplet divisions, or only dotted note divisions of the **TEMPO** when **SYNC** is enabled.

RATE MIN (0 Hz – 1.00 kHz. *DEFAULT: 0.01 Hz)*
Selects a lower limit for the setting of the **RATE** knob.

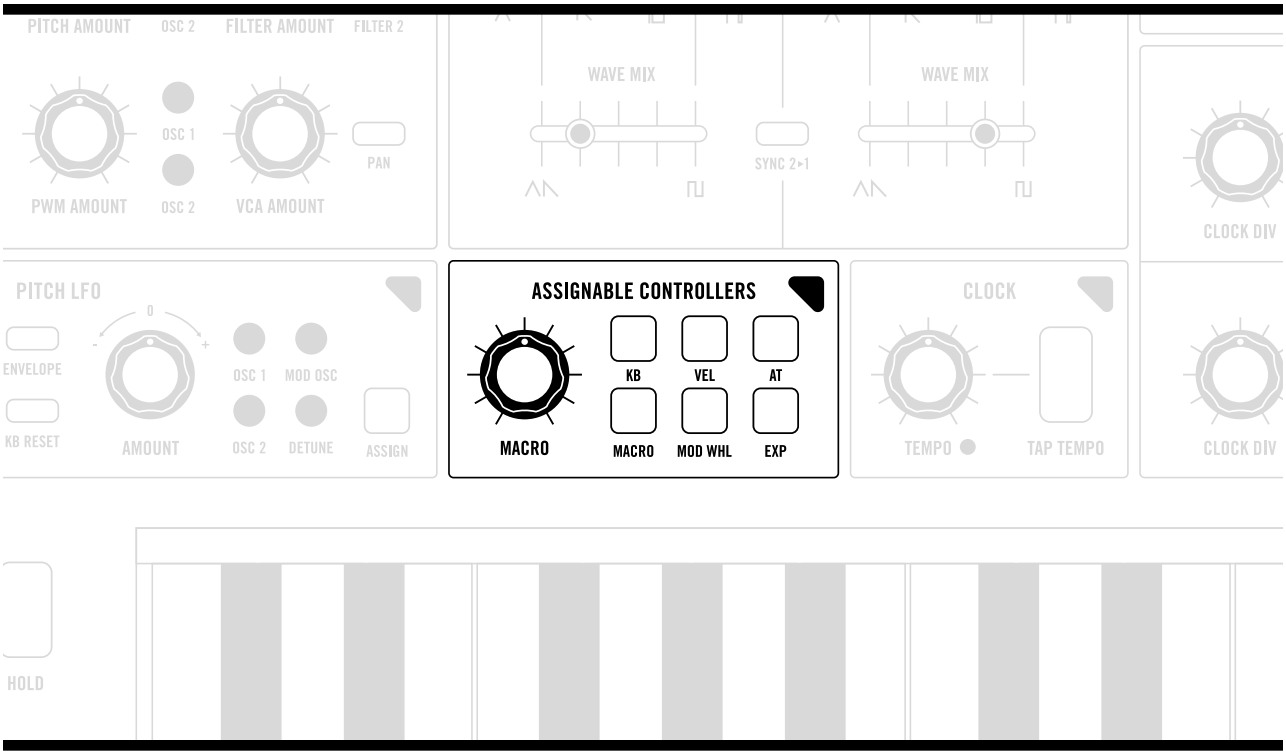
RATE MAX (0 Hz – 1.00 kHz. *DEFAULT: 40.00 Hz)*
Selects an upper limit for the setting of the **RATE** knob.

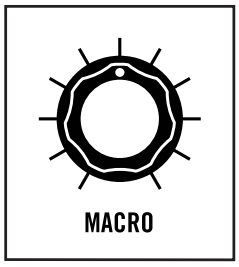
ASSIGN POLARITY (BI, UNI. *DEFAULT: BI)*
Selects whether the **PITCH LFO** defaults to **UNI**polar or **BI**polar polarity when using the **ASSIGN** button to create modulation routing.

MUSE MODULES *(Cont.)*

ASSIGNABLE CONTROLLERS

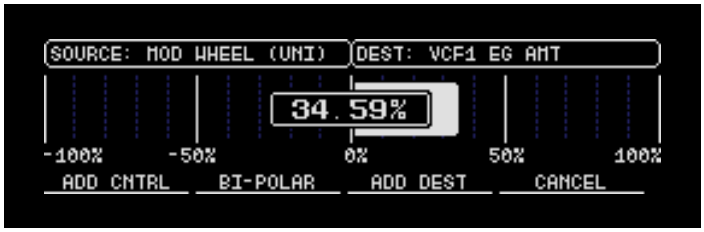
The **ASSIGNABLE CONTROLLERS** are a collection of expressive controls that can be used as either modulation sources or modulation controllers. Pressing any button will allow you to assign the **KEYBOARD, VELOCITY, AFTERTOUCH, MACRO KNOB, MOD WHEEL,** or **EXPRESSION PEDAL** to modulation destinations via the QUICK ASSIGN view.





MACRO (KNOB)
The **MACRO** knob is a knob with no dedicated panel function, but which can be assigned to control one or several functions on Muse. It is an additional knob-based point of expression that can be thought of as similar in function to the **MOD WHEEL** - allowing for dramatic patch morphing controlled from a single knob or can be a simple controller for a single mod slot in the mod map. Can be programmed as either a unipolar or bipolar control.

QUICK ASSIGN
The buttons in the **ASSIGNABLE CONTROLLERS** section (as well as the **ASSIGN** buttons for **LFO 1+2**, **PITCH LFO, FILTER ENVELOPE,** and **VCA ENVELOPE**) can be used to quickly create modulation routings in the **MOD MAP**. Press the **ASSIGN** button of any modulation source on the panel to bring up the quick assign view.



MUSE MODULES *(Cont.)*

Adjusting any panel control will select that parameter as the modulation destination. Continuing to adjust the destination panel control will scale the modulation amount in either a positive or negative direction with a setting of noon resulting in 0% modulation. Click the **ENTER** button in the **PROGRAMMER** or click down on the **SELECT** encoder to confirm the assignment.

TIP: *With the quick assign view open you can press any* ***ASSIGN*** *button on the panel to swap the modulation source or adjust any panel control to change the modulation destination.*

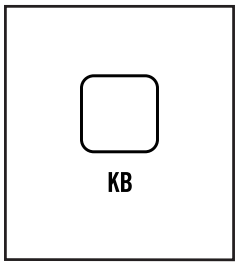
NOTE: *Any modulation routing can be further edited in the* ***MOD MAP*** *– see the* ***MOD MAP*** *section.*

(SOFT BUTTON) **ADD CNTRL**
Confirms the current quick assignment, adding it to an empty modulation slot in the **MOD MAP.** Pressing **ADD CNTRL** will bring you to the newly created modulation routing in the MOD MAP with the **CONTROLLER** selection highlighted to allow selection of a modulation CONTROLLER.

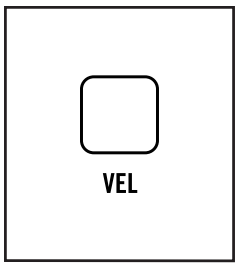
(SOFT BUTTON) **BI-POLAR**
Toggles between uni-polar and bi-polar behavior for modulation sources capable of either (**LFO**s 1+2, **PITCH LFO**, the **MACRO** knob, and the **MOD WHEEL**).

(SOFT BUTTON) **ADD DEST**
Confirms the current quick assignment (adding it to an empty modulation slot) and begins the quick assignment process anew using the same source. This is an easy way to quickly generate multiple modulation assignments using the same source.

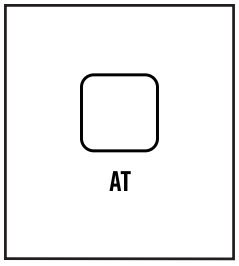
(SOFT BUTTON) **CANCEL**
Exits the quick assignment without saving.



KB
Enters quick assign using the **KEYBOARD** as modulation source.

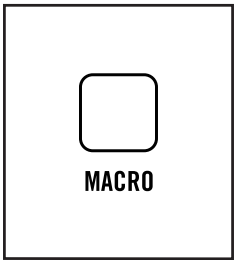


VEL
Enters quick assign using keyboard **VELOCITY** as modulation source.

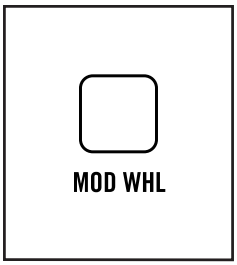


AT
Enters quick assign using keyboard **AFTERTOUCH** as modulation source.

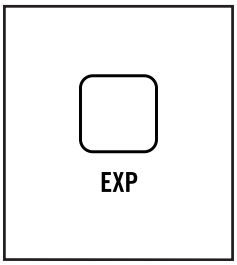
MUSE MODULES *(Cont.)*



MACRO
Enters quick assign using the **MACRO** knob as modulation source.



MOD WHL
Enters quick assign using the **MOD WHEEL** as modulation source.



EXP
Enters quick assign using the **EXPRESSION PEDAL** input as modulation source.

NOTE: *All assignable controllers can be used as modulation controllers as well as modulation sources – configurable via the* ***MOD MAP.***

ASSIGNABLE CONTROLLERS MORE MENU

(SOFT BUTTON) G MOD EDIT
Muse contains two global LFOs, two global envelopes, and two global triggered random sources (G RAND TRIG 1/2) for modulating global modulation destinations. Engaging G MOD EDIT will set the triangular MORE button (and those in the LFOs and envelopes) flashing indicating you are editing the global modulation sources (G LFO 1, G LFO 2, G EG 1, G EG 2) with the main modulation source controls (LFO 1, LFO 2, FILTER ENVELOPE, VCA ENVELOPE respectively).

GLIDE TYPE *(*LCR, LCT, EXP. *DEFAULT: LCR)*
Selects between three distinct types of Glide - each one handling the timing of portamento between two notes a bit differently.

- **LCR *(LINEAR CONSTANT RATE)***
  In this mode, the Glide Rate is constant, so gliding further takes longer. If the glide takes a specific amount of time to go one octave, it will take twice that amount of time to glide two octaves.

- **LCT *(LINEAR CONSTANT TIME)***
  In this mode, the Glide Time is constant, regardless of the distance traveled. Gliding to a note one octave away will take exactly the same amount of time as gliding to a note two octaves away

- **EXP *(EXPONENTIAL)***
  In this mode, the Glide Rate changes over an exponential curve, slowing as the target note is approached.

PITCH WHEEL RANGE (0-12. *DEFAULT: 7)*
Selects the range in semitones for the pitch bend wheel, from 0 (effectively turning off the pitch wheel for the selected **TIMBRE**) to 12 (equivalent to an octave).

TIP: *You may set the **PITCH WHEEL RANGE** differently for different **TIMBRES** in a patch. This can be especially useful in splits or stacks to have each timbre respond differently to pitch wheel activity.*

SUSTAIN ON (ON/OFF. *DEFAULT: ON)*
Enables or disables activity at the SUSTAIN pedal input for the current TIMBRE.

TIP: *You may set **SUSTAIN** behavior differently for different **TIMBRES** in a patch, so that one **TIMBRE** sustains on pedal motion while the other does not.*

MACRO ASSIGN (UNI, BI. *DEFAULT: UNI)*
Selects whether the **MACRO** knob defaults to **UNI**polar or **BI**polar polarity when using the **ASSIGN** button to create modulation routing.

M WHEEL ASSIGN (UNI, BI. *DEFAULT: UNI)*
Selects whether the **MOD** wheel defaults to **UNI**polar or **BI**polar polarity when using the **ASSIGN** button to create modulation routing.

AFTERTOUCH SENSITIVITY (NORMAL, HIGH. DEFAULT: NORMAL)
Sets aftertouch sensitivity globally - NORMAL is best for most players.

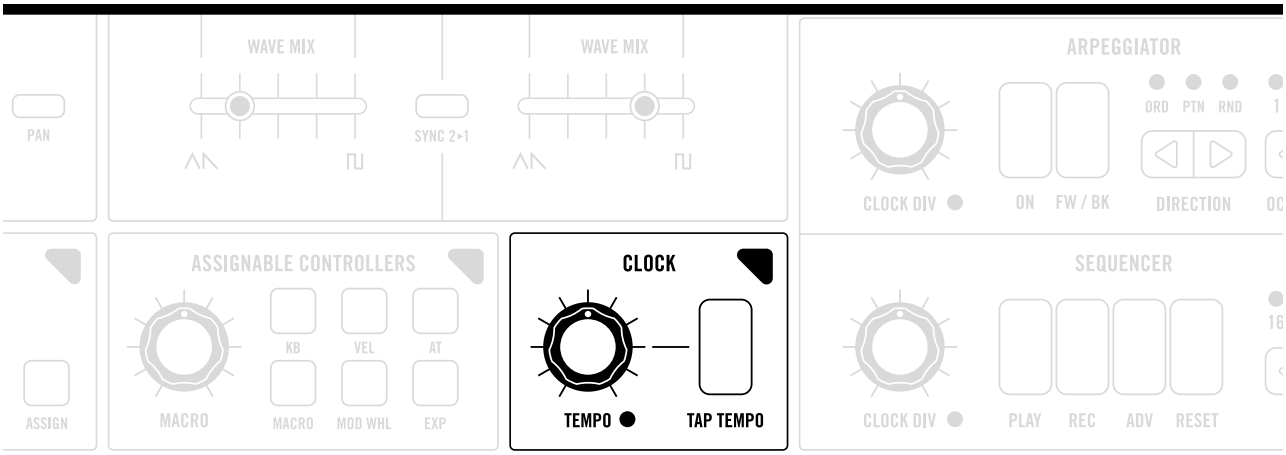
TIP: *Aftertouch may be further processed using the SLEW function in the MOD MAP to slow down the effect of aftertouch changes.*

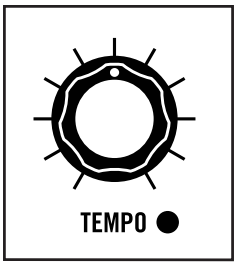
G RAND TRIG 1/2 SOURCE (A, B)
Sets the trigger source for the global RAND TRIG 1/2 modulation sources - either TIMBRE A or B. A note played in the selected timbre will cause a new random value to be generated for the global RAND TRIG source.

MUSE MODULES *(Cont.)*

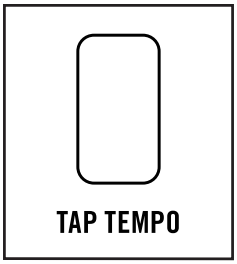
CLOCK

The **CLOCK** section establishes the global tempo for Muse – generating a tempo via the internal clock or by selecting an external clock (analog or MIDI) via the **MORE** menu.





TEMPO
Controls the tempo of the internal clock, setting its quarter-note value. Its default range is 30 Beats Per Minute (BPM) at the lowest knob setting to 300 Beats Per Minute at the knob's maximum setting.



TAP TEMPO
Generates a **TEMPO** setting via a series of successive presses on the **TAP TEMPO** button, which will override the **TEMPO** knob's setting. Adjusting the **TEMPO** knob will revert to the setting determined by the **TEMPO** knob. **TAP TEMPO** mode is governed by the same range limits as the **TEMPO** knob, i.e. 30 BPM to 300 BPM.

TIP: *The **CLOCK's MORE** menu contains an option allowing users to select whether TAP TEMPO will derive its setting from a series of two taps on the **TAP TEMPO** button or averaging four taps on the TAP TEMPO button - catering to different users' levels of rhythmic accuracy.*

MUSE MODULES *(Cont.)*

CLOCK MORE MENU

CLOCK SOURCE (AUTO, INTERNAL, ANALOG, MIDI IN, USB. *DEFAULT: AUTO)*
Determines the master clock source for Muse – either the **INTERNAL** clock, external **ANALOG** clock (via **CLOCK IN**), external clock via the 5 pin **MIDI IN** jack, or external clock via **USB**.

MIDI CLOCK OUT (OFF, SEQ, ON. DEFAULT: OFF)
Enables MIDI output clock messages. ON enables MIDI clock output, SEQ outputs MIDI clock messages depending on SEQ clock status, OFF disables MIDI clock output.

MIDI START/STOP OUT (ON, OFF. DEFAULT: OFF)
Enables (ON) or disables (OFF) MIDI START/STOP output messages.

SEQ START/STOP IN (ON, IGNORE. DEFAULT: ON)
Determines whether the SEQUENCER listens to (ON) or ignores (IGNORE) MIDI START/STOP messages. When recieving a START message the SEQUENCER will reset to step 1 and begin playbackback - playback will stop upon receipt of a STOP message.

ARP START/STOP IN (ON, IGNORE. DEFAULT: ON)
Determines whether ARPEGGIATOR listens to (ON) or ignores (IGNORE) MIDI START/STOP messages. When recieving a START message the ARPEGGIATOR will reset to step 1 and begin playback - playback will stop upon recepit of a STOP message.

CLOCK IN MODE (DIV, PER-STEP. DEFAULT: DIV)
Configures how Muse treats an external analog clock present at the CLOCK IN jack. In DIV mode it expects a stable analog clock at a rate defined by CLOCK IN PPQN below in pulses per quarter note. In PER-STEP mode the ARP/SEQ will each advance one step upon clock pulse recieved.

NOTE: *When set to PER-STEP, press PLAY to arm the sequencer before starting the external analog clock source.*

CLOCK OUT SOURCE (INT CLOCK, STRT/STOP, ANALOG THRU, ARP CLOCK, SEQ CLOCK, GATE A, GATE B. *DEFAULT: INT CLOCK)*
Configures the signal at the **CLOCK OUT** jack on the rear panel of Muse.

INT CLOCK
Outputs the internal **CLOCK** of Muse as determined by the **CLOCK** module.

STRT/STOP
Outputs the internal **CLOCK** of Muse, but will stop outputting clocks when a **MIDI** Stop message is received and resume when a **MIDI** Start/Continue message is received.

ANALOG THRU
Outputs the signal present at the **CLOCK IN** jack.

ARP CLOCK
Outputs a clock every time the **ARPEGGIATOR** produces a note. If no notes are held, no clocks are sent.

SEQ CLOCK
Outputs a clock pulse on each step while the **SEQUENCER** is running.

MUSE MODULES *(Cont.)*

GATE A
Outputs a gate signal when the keyboard is played and produces a note in **TIMBRE A**.

GATE B
Outputs a gate signal when the keyboard is played and produces a note in **TIMBRE B.**

INT CLOCK DIV
(1/64th, 1/32nd, 1/16th, 1/8th, Quarter, Half, Whole, or 2 whole notes – with dotted (D) or triplet (T) variations)
Allows the **CLOCK OUT** to be set to a different clock division than the **ARP** or **SEQ** when using the **INT CLOCK** setting.

CLOCK IN PPQN (4, 8, 16, 24, 48. DEFAULT: 4)
Establishes the expected rate of an incoming analog clock at CLOCK IN jack in PPQN (pulses per quarter note).

MIDI CLOCK OFFSET BPM (+/- 50 BPM within overall BPM limits. *DEFAULT: +0.00)*
Sets a tempo offset relative to an external MIDI clock. If an external MIDI clock is set to 120 BPM, Muse may be set to 121 BPM by setting **MIDI CLOCK OFFSET BPM** to +1.00 - allowing for tight rhythmic phasing against an external clock.

***TIP: MIDI CLOCK OFFSET BPM** will always be reset back to +0.00 after power cycle.*

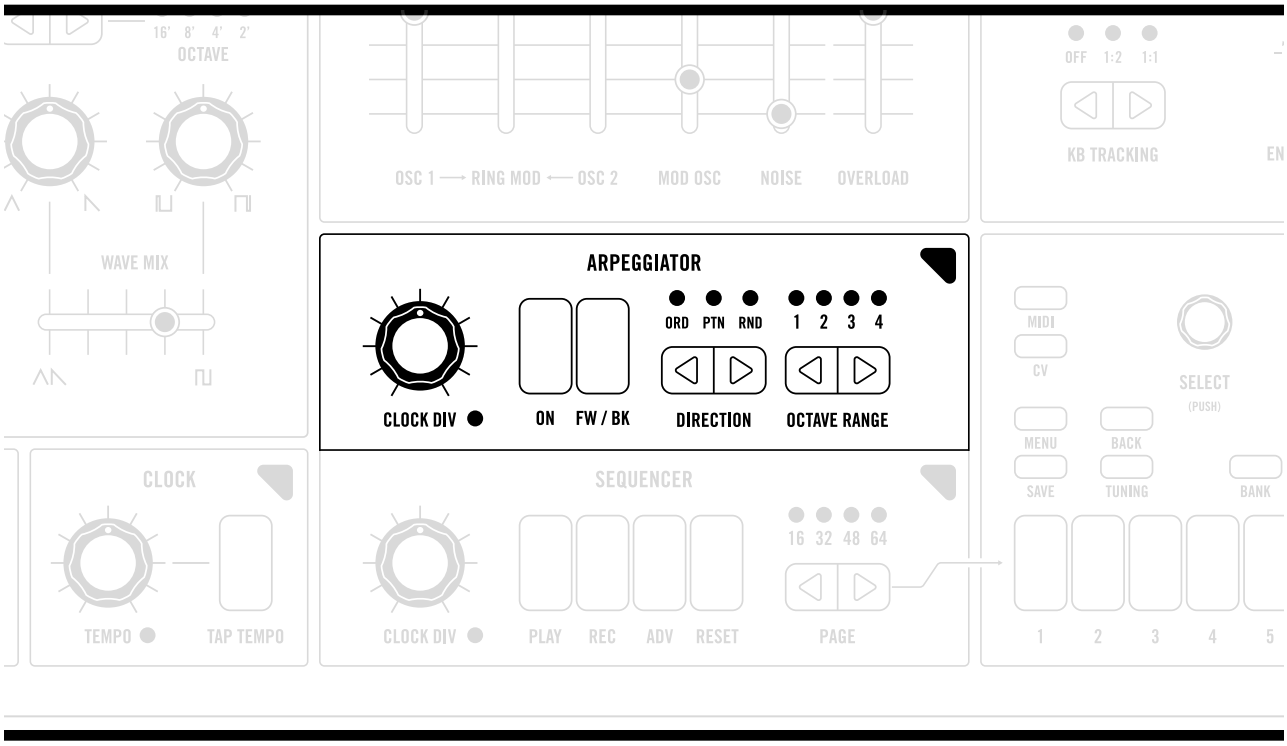
MUSE MODULES *(Cont.)*

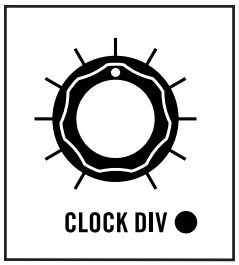
ARPEGGIATOR

The **ARPEGGIATOR** is a powerful compositional tool which takes the notes being held on the keyboard and plays them one at a time in a repeating, rhythmic pattern. Arpeggiators are commonly used to generate patterns of notes while holding down chords, giving you control over the direction of those patterns, the number of octaves the patterns span, and the rate of arpeggiation.

Muse's **ARPEGGIATOR** goes much deeper than others by giving you access to fascinating and deep pattern structures with note leapfrogging, alternating pattern options, and serialism mode. Further, you can program rhythms directly in the **ARPEGGIATOR**, configure probabilistic skipping, and engage loop locking. Muse's **ARPEGGIATOR** is much more than meets the eye, creating swooping cascades of notes, building rhythmic bases for songs, and generating new and exciting musical ideas.

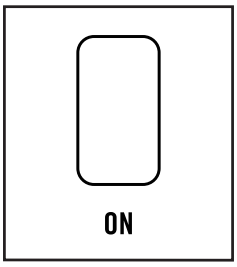
TIP: *Patterns from the* ***ARPEGGIATOR*** *can be recorded in real time into the* ***SEQUENCER*** *for saving, editing, and recall by pressing* ***REC*** *while both the* ***SEQUENCER*** *and* ***ARPEGGIATOR*** *are running.*





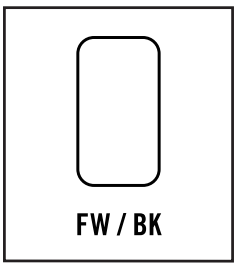
CLOCK DIV
Selects a rhythmic subdivision of the master clock **TEMPO** to be used as the tempo of the **ARPEGGIATOR**.

TIP: *Use* ***CLOCK DIVISION TYPE*** *in the MORE menu to exclude certain rhythmic subdivisions from being accessed by the* ***CLOCK DIV*** *knob. This can be useful during performance to avoid selecting unwanted rhythmic divisions when playing live.*



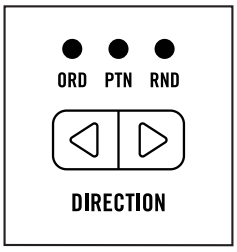
ON
Turns on the **ARPEGGIATOR**, playing notes held on the keyboard in a rhythmic pattern based on the **CLOCK DIV, ORDER, RANGE,** and **STEP** settings.

TIP: *Hold a series of notes on the keyboard and press the* ***HOLD*** *key on the Left-Hand Controller to allow the* ***ARPEGGIATOR*** *to run without the need to continue holding down notes on the keyboard. Pressing new keys on the keyboard will replace the current notes with whichever ones are next held down.*



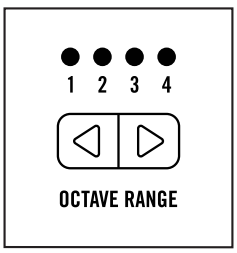
FW/BK
Enables pendulum motion. Arpeggiated notes will first play in the order determined by the **DIRECTION** button from beginning to end, then will play in reverse order from end to beginning.

TIP: *When the direction button is set to* ***RND****, users will be able to set a* ***FW/BK RANDOM LENGTH*** *in the* ***MORE*** *menu. This setting will determine how many steps the random pattern will move forward before reversing direction and playing that same pattern backwards. Anytime the arpeggiator is moving forward the pattern will play notes at random, but anytime the arpeggiator is moving backward, it will mirror the forward portion of the pattern based on the* ***FW/BK RANDOM LENGTH*** *setting.*



DIRECTION
Selects between three different operational modes for the arpeggiator:

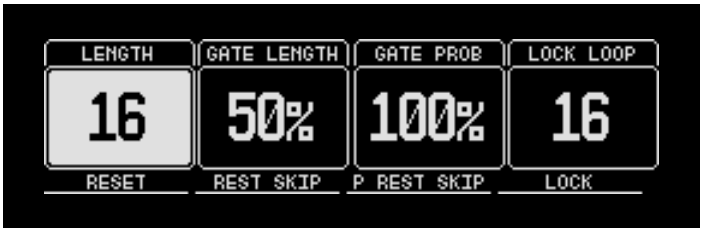
- **ORD**
  Arpeggiated notes will play in the same order they were originally played on the keyboard.
- **PTN**
  Users can select from a list of different algorithmic arpeggio movement options in the MORE menu. Defaults to UP (notes play in an ascending order).
- **RND**
  Arpeggiated notes will play back in random order.



OCTAVE RANGE
Selects the number of octaves that will be used to play an arpeggiated pattern - between 1 to 4 octaves. When more than 1 octave is selected, the arpeggiated pattern will move through different octaves of the arpeggiator pattern based on settings in the **MORE** menu.

MUSE MODULES *(Cont.)*

ARPEGGIATOR SETTINGS



Pressing the **ARP** button in the **PROGRAMMER** will bring up the main interface for controlling the **ARPEGGIATOR.**

STEP BUTTONS
In the **ARPEGGIATOR**'s initialized state, buttons 1-16 in the **PROGRAMMER** are lit and a chase light can be seen moving through the steps at a rate based on the **CLOCK DIV** setting. Pressing a step button will create a musical rest, turning that step's LED off and preventing playback of a note on that step.

LENGTH
Selects a length for the **ARPEGGIATOR**'s rhythmic pattern based on the **STEP** buttons, allowing you to extend the rhythmic pattern beyond 16 steps and up to 64 steps. Groups of 16 steps can be addressed using the **PAGE** button in the **SEQUENCER**.

***(SOFT BUTTON)* RESET**
Resets the arpeggiator to first note of the arpeggio pattern based on the arpeggiator settings.

GATE LENGTH
Selects a gate length globally for every **STEP** in the **ARPEGGIATOR** – from 1% of the step length to 99%.

***(SOFT BUTTON)* REST SKIP**
Toggles between two modes: **SHIFT** or **SKIP** (default: **SHIFT**). This setting determines the **ARPEGGIATOR**'s behavior when a rest is programmed via the **STEP** buttons. There are two available settings:

- **SHIFT**
  The musical note that would have played on a step with a rest is shifted to the next available step without a rest. Default behavior – REST SKIP is not highlighted.
- **SKIP**
  The musical note that would have played on a step with a rest is skipped in the arpeggiated pattern. Pressing **REST SKIP** will highlight it and indicate **SKIP** behavior.

GATE PROB
Selects probability of any **STEP** to be randomly converted into a rest. With 100% selected, the arpeggiated pattern will play back exactly as programmed, with 0% selected, the arpeggiated pattern will only contain rests. With any settings between 1-99%, users are controlling how often a programmed note will randomly be converted to a rest. This setting applies globally to every **STEP** in the **ARPEGGIATOR**.

MUSE MODULES *(Cont.)*

***(SOFT BUTTON)* P REST SKIP**
Toggles between two modes: **SHIFT** or **SKIP** (default: **SHIFT**). It functions similarly to the **REST SKIP** button, but only applies to rests that occur due to randomized rests resulting from **GATE PROB** settings.

There are two available settings:

- **SHIFT**
  The musical note that would have played on a step with a randomized rest is shifted to the next available step without a rest. Default behavior – **P REST SKIP** is not highlighted.
- **SKIP**
  The musical note that would have played on a step with a randomized rest is skipped in the arpeggiated pattern. Pressing **P REST SKIP** will highlight it and indicate **SKIP** behavior.

LOCK LOOP and ***(SOFT BUTTON)* LOCK**
The **LOCK** soft button allows users to lock a certain number of previously played steps to create a pseudo-sequence. The length of this locked pattern is based on the **LOCK LOOP** setting ranging from 1-64 steps (a buffer of 64 notes is always captured so the length can be increased/decreased even when locked).

With **LOCK** engaged, **GATE PROBABILITY** and **RND DIRECTION** settings will be ignored, and whatever was played leading up to **LOCK** being engaged will play back indefinitely until **LOCK** is disengaged. For example, if the **LOCK LOOP** is set to 19 steps, when **LOCK** is engaged, the last 19 steps that played in the arpeggiated patten will be repeated (this includes steps that were randomly dropped based on the **PROBABILITY** settings).

LOCK lets you capture and hold onto happy accidents that occur while playing the **ARPEGGIATOR** or loop smaller sections within a longer arpeggio during performance. **LOCK** functionality can further be used as a sequence sketch pad of sorts and patterns can be recorded into the **SEQUENCER**.

***TIP:** While the **ARPEGGIATOR** has **LOCK** engaged, users can still play an alternate set of notes on the keyboard for the **ARPEGGIATOR** to use when **LOCK** is disengaged, this can also be a fun method for adding notes into the **LOCK** pattern by "playing" the **LOCK** button. New notes added into a **LOCKED** pattern will be added in the position they were captured live.*

ARPEGGIATOR MORE MENU

CLOCK DIV (STRGHT, TRPLT, DOTTED, COMBO. *DEFAULT: STRGHT)*
Determines whether the CLOCK DIV knob can hit only straight divisions of the global TEMPO, only triplet divisions, only dotted note divisions, or a combination of all (**COMBO**).

SWING (25% - 75%. *DEFAULT: 50%)*
Selects an amount to delay every second step of an arpeggiated pattern, with a 50% setting yielding no swing.

OCT MOVEMENT (PTN/NOTE/RND. *DEFAULT: PATTERN)*
Determines how octave movement is handled in the **ARPEGGIATOR**. (This setting doesn't apply to the **RND DIRECTION**, which will always use the **RANDOM OCTAVE MOVEMENT** setting).

- **PTN**
  Allows a full arpeggio pattern to play through before moving to a different octave.
  ***NOTE:** Makes the **ARPEGGIATOR** jump between octaves of a single note before moving to the next note.*
- **RND**
  Assigns a random octave within the selected range to each note in the arpeggiated pattern.

MUSE MODULES *(Cont.)*

FW/BK:PIVOT NOTE (ON/OFF. *DEFAULT: OFF)*
Determines whether notes at the beginning and end of the arpeggio pattern are repeated when changing direction when **FW/BK** is engaged.

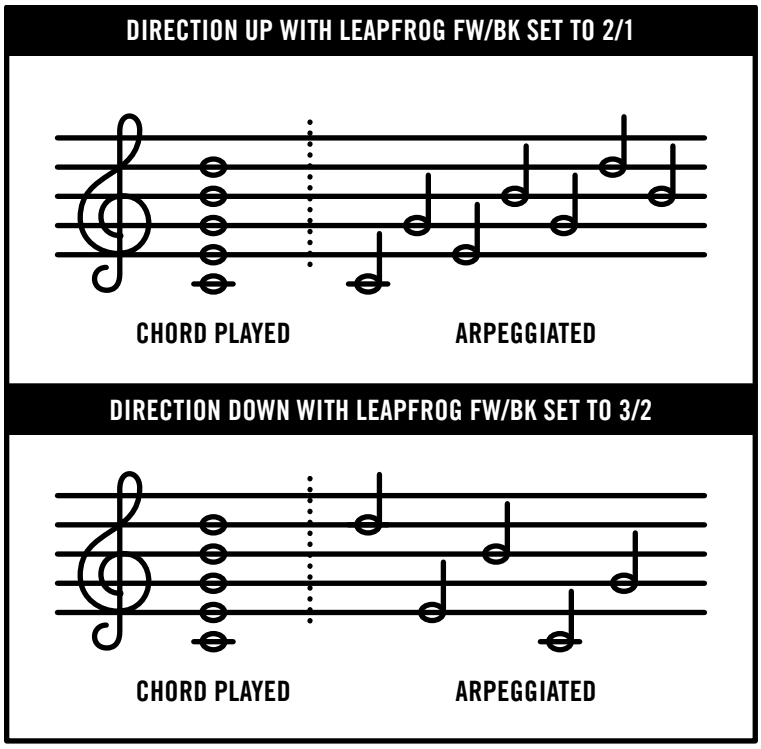
- **ON**
  Notes at the beginning and end of the arpeggio will be repeated. (Ex: **DOWN** + **FW/BK** played C1-E1-G1, arpeggiated: G1, E1, C1, C1, E1, G1, G1, E1, C1, etc.)
- **OFF**
  Notes at the beginning and end of the arpeggio will NOT be repeated. (Ex: **DOWN** + **FW/BK** played C1-E1-G1, arpeggiated: G1, E1, C1, E1, G1, E1, C1, etc.)

FW/BK: RND LENGTH *(2-64. DEFAULT: 2)*
Determines how many steps the random pattern will move forward before reversing direction and playing that same pattern backwards when the **RND** direction and **FW/BK** settings are both engaged. Anytime the arpeggiator is moving forward the pattern will play notes at random, but anytime the arpeggiator is moving backward it will mirror the forward portion of the pattern based on the **FW/BK RANDOM LENGTH** setting.

PTN:DIRECTION *(UP/DOWN. DEFAULT: UP)*
Determines the direction of **ARPEGGIATOR** movement when **DIRECTION** is set to **PTN**:

- **UP**
  Notes are played in order from lowest to highest
- **DOWN**
  Notes are played in order from highest to lowest

PTN:LEAPFROG FW/BK (0-8/0-8. *DEFAULT: 1/0)*
Skips steps to create leapfrog movement behaviors (i.e. 2 steps forwards/1 step backwards). The **FW** setting will determine how many steps are skipped in the forward direction, and the BW setting will determine how many steps are skipped in the backwards direction. **FW/BW** cannot be set to the same number. (Ex: UP + LEAPFROG (2/1) played C1-E1-G1-B1-D2, arpeggiated: C1, G1, E1, B1, G1, D2, B1. DOWN + LEAPFROG (3/2) played C1-E1-G1-B1-D2, arpeggiated: D2, E1, B1, C1, G1.)



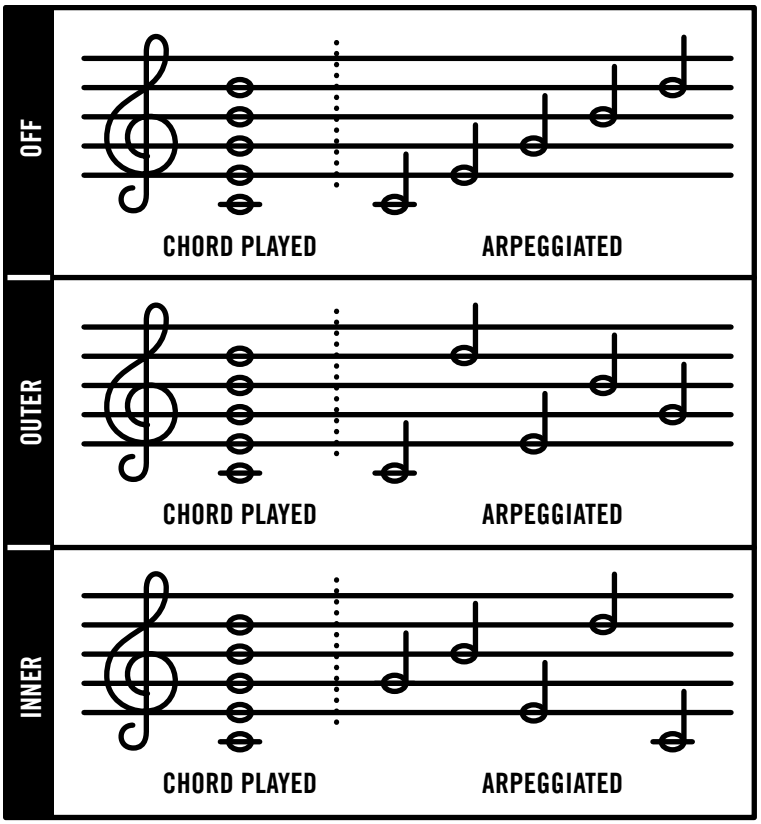
MUSE MODULES *(Cont.)*

PTN:ALTERNATE (OFF/INNER/OUTER. *DEFAULT: OFF)*
Creates alternating note patterns in combination with the **DIRECTION** setting. It will be most noticeable when 4 or more notes are played.

- **OFF**
  No note alternation occurs (Ex: **UP** + **OFF** played: C1-E1-G1-B1-D2, arpeggiated: C1,E1,G1,B1,D2)

- **OUTER**
  Notes are alternated from the outer notes inward, and the starting note would be determined by the **PATTERN DIRECTION** setting, with **DOWN** starting on the highest note, and UP starting on the lowest note. (Ex: UP + OUTER played: C1-E1-G1-B1-D2, arpeggiated: C1,D2,E1,B1,G1. **DOWN** + **OUTER** played C1-E1-G1-B1-D2, arpeggiated: D2,C1,B1,E1,G1)

- **INNER**
  Notes are alternated from the inner notes outward, and the starting note would be determined by the **PATTERN DIRECTION** setting. When users arpeggiate an even number of notes, **UP** patterns will begin on the lower center note, and **DOWN** patterns will begin on the upper center note. (Ex: **UP** + **INNER** played: C1-E1-G1-B1-D2, arpeggiated: G1,B1,E1,D2,C1. **DOWN** + **INNER** played C1-E1-G1 B1-D2, arpeggiated: G1,E1,B1,C1,D2.)



MUSE MODULES *(Cont.)*

RND:SERIAL MODE (OFF/ON. *DEFAULT: OFF)*
Determines whether played notes are allowed to be repeated before all other notes have played in a given **RND** arpeggio pattern. This will result in more of a pseudo-random feel as it will prevent the **ARPEGGIATOR** from being able to freely repeat notes in a random pattern, and instead force the **ARPEGGIATOR** to play through all pressed notes in a simple phrase, and then continue creating random permutations of that phrase.

- **OFF**
  Notes are allowed to repeat within a pattern before all other notes have played.
  (Ex: played C1-E1-G1-B1-D2, arpeggiated: C1, D2, E1, B1, G1, G1, D2.)

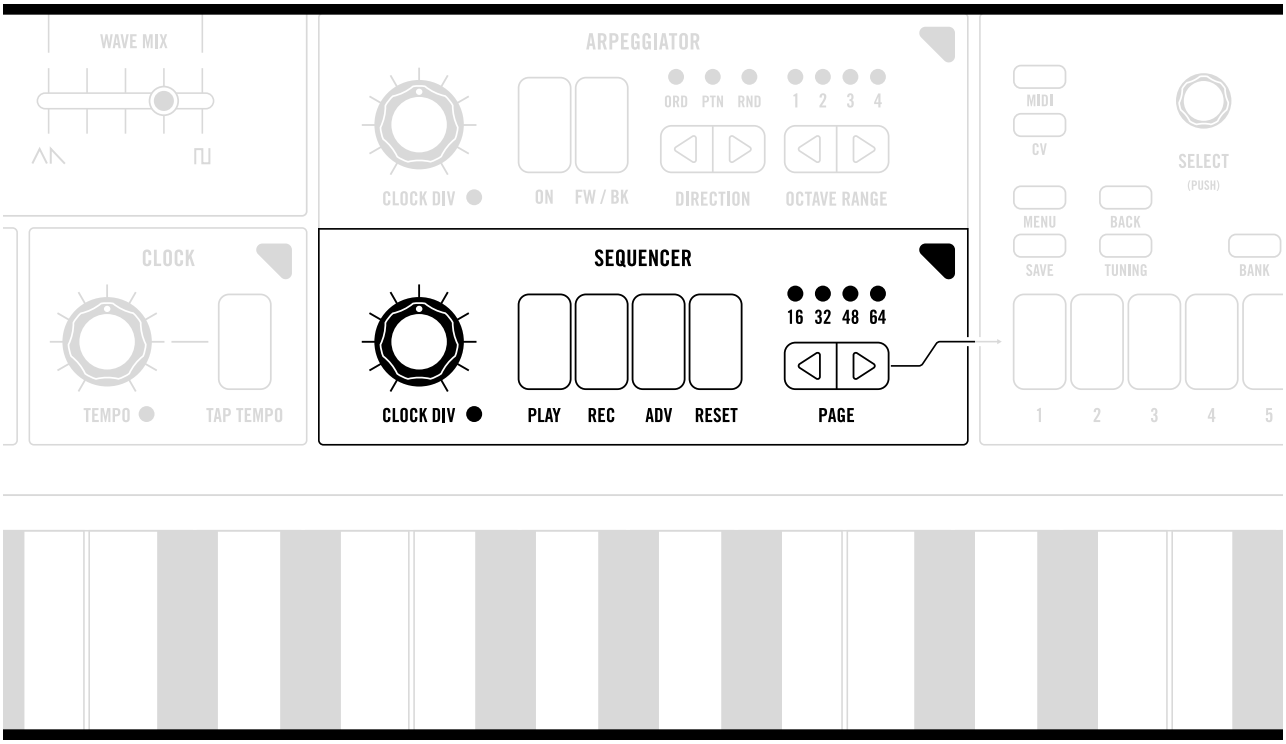
- **ON**
  Notes are NOT allowed to repeat within a pattern before all other notes have played.
  (Ex: played C1-E1-G1-B1-D2, arpeggiated: [C1, G1, E1, B1, D2], [E1, G1, D2, B1, C1], etc.)

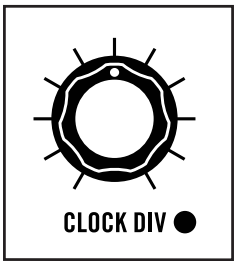
MUSE MODULES *(Cont.)*

SEQUENCER

Muse features a deep and flexible **SEQUENCER** for composing full melodic passages and bi-timbral arrangements. Where many synthesizers store sequence data as part of a patch, on Muse the **SEQUENCER** is fully independent and able to control patch selection as a parameter of sequencing. The bank of 256 sequences lives alongside the 256 patches, allowing you to audition different patches while composing and playing back a sequence.

Sequences can be played into the **SEQUENCER** by either entering a sequence note-by-note (**STEP RECORD** mode) or by playing live while the **SEQUENCER** runs, with each note indexed and saved as you play. Muse's **SEQUENCER** allows you to dive deep and edit every single note, with the ability to adjust note timing down to a microscopic level, engage with generative per-step probability controls, and even step record up to eight different front panel parameter controls per-sequence.

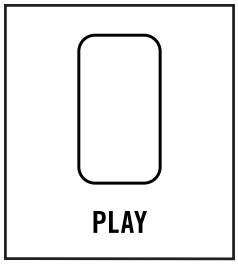




CLOCK DIV
Selects a rhythmic subdivision of the master clock TEMPO to be used as the tempo of the SEQUENCER.

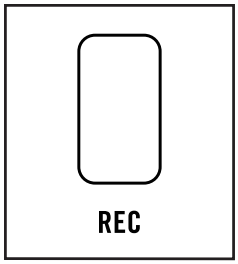
TIP: *Use* ***CLOCK DIVISION TYPE*** *in the* ***MORE*** *menu to exclude certain rhythmic subdivisions from being accessed by the* ***CLOCK DIV*** *knob. This can be useful during performance to avoid selecting unwanted rhythmic divisions when playing live.*

MUSE MODULES *(Cont.)*

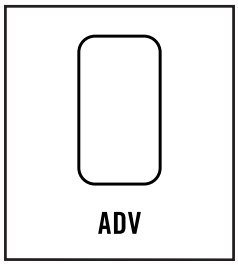


PLAY
Sets the **SEQUENCER** running, playing back the current sequence (selected via the **SEQ** button in the **PROGRAMMER**) using the currently active **PATCH** (selected via **PATCH**). By default, the sequence plays at a rate determined by the global **TEMPO** set in the **CLOCK** module and the **SEQUENCE**'s stored clock division set by **CLOCK DIV**.

When **EXTERNAL MIDI CLOCK** is selected in the **CLOCK** module's MORE menu, the **PLAY** button will default to being controlled externally by **MIDI START/STOP** messages. This can be disabled in the **CLOCK MORE MENU**.

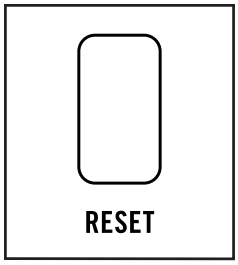


REC
Engages recording – entering **STEP RECORD** mode if the **SEQUENCER** is not running, and **LIVE RECORD** mode if it is. Holding **SHIFT** and pressing **REC** will cause it to blink, this indicates **OVERDUB** mode, allowing you to record overdubs in either **STEP RECORD** or **LIVE RECORD** modes.

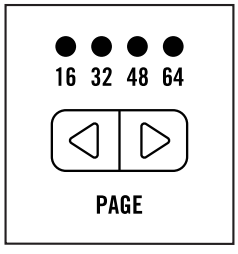


ADV
Advances the **SEQUENCER** one step, allowing you to audition notes in your sequence step by step or moving the location of the play-head to begin playing the sequence from a step other than step 1 when initiating playback. Pressing **ADV** while holding **SHIFT** will move back one step.

***TIP:** Holding **ADV** will sustain auditioned notes until **ADV** is let go.*



RESET
Resets the **SEQUENCER** so that step 1 is the first note played back.

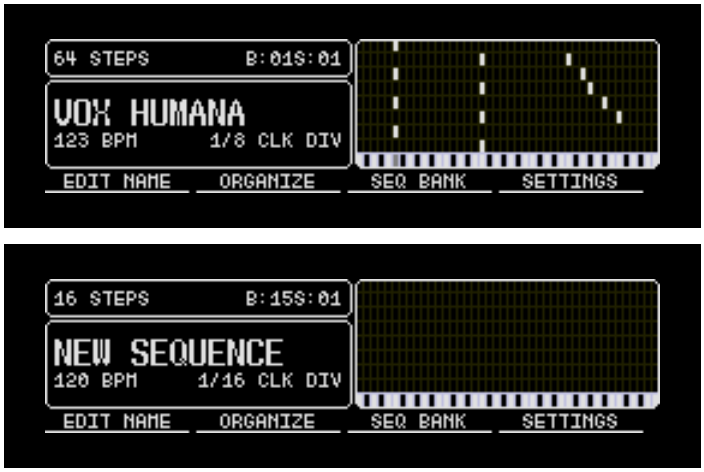


PAGE
Selects which section of 16 steps within a sequence the **PROGRAMMER** is addressing when editing sequences longer than 16 steps – steps 1-16, steps 17-32, steps 33-48, or steps 49-64.

***NOTE: PAGE** is limited by the **LENGTH** of the current sequence (set in the **SEQ SETTINGS** menu – see below).*

MUSE MODULES *(Cont.)*

SEQUENCER OPERATION



Pressing **SEQ** in the **PROGRAMMER** puts the **PROGRAMMER** into **SEQ** mode – which displays the active sequence information or allows users to choose a different sequence from the active sequence bank via the 1-16 buttons. To bring up an initialized sequence, navigate to one of the user sequence banks by pressing the **SEQ BANK** soft button, pressing location 15 to switch to sequence bank 15, and then pressing **SEQ BANK** again to exit sequence bank selection mode. All sequences in sequence banks 15 and 16 are initialized (and named **NEW SEQUENCE**), so press location 1 to begin from **NEW SEQUENCE** number 1.

NOTE: *You may hold the **INIT** button and press a sequence location (1-16) while in the **SEQ** view to initialize a new sequence. Sequence initialization will not overwrite any underlying sequence, as sequence changes are not stored until explicitly saved via the **SAVE** button (see **SAVE SEQUENCE**).*

The ***SEQUENCER*** has two main operating modes: **STEP RECORD**, which allows you to precisely enter a sequence note-by-note while the **SEQUENCER** is NOT running; and **LIVE RECORD**, which allows you to play note data into the **SEQUENCER** live while it runs using the keyboard. Let's look at how to enter a sequence in either of these modes. By default new sequences will be set to a length of 16 steps, but this can be adjusted in the sequence SETTINGS menu accessible via the SEQ view soft button.

NOTE: *If focused on the **STEP VIEW** you can still access the sequence **SETTINGS** menu by holding **SHIFT** and then pressing the **SETTINGS** soft button.*

STEP RECORD

Pressing **REC** while the sequence is not running (**PLAY** button is off) will enter **STEP RECORD** mode – switching the **PROGRAMMER** into **STEP** mode with each button 1-16 representing a step of your sequence and armed to begin recording with step 1.

Press a note on the keyboard and you will index that note onto the current step and advance the sequencer forward one step. Press multiple notes down at once to index a chord onto the current step (the sequencer will only move on to the next step once all keys are released - as long as you are holding the keys down you can continue to add notes onto the current step).

Pressing **ADV** will advance the sequencer a step without indexing any note information, creating a rest. You can also jump to a particular step directly by pressing any of the step buttons 1-16. Alternatively, you can always play keys while holding a step button to quickly index notes onto that step (releasing the step button and holding again will allow you to replace notes on that step if you want to change them).

Once you reach the end of the sequence, the sequencer will wrap around back to the beginning and any new notes added to a step will overwrite any note information which was on that step previously.

Press **REC** to end recording and press **PLAY** to listen back to your sequence.

NOTE: *Holding **INIT** and pressing **REC** will undo any changes to your sequence since you last hit **REC**. This way you can experiment with your sequence – changing things around, adding notes, etc. - and undo those changes if you don't like the results!*

MUSE MODULES *(Cont.)*

You can add overdubs by holding **SHIFT** and pressing **REC** – **REC** will blink, indicating you are in **STEP OVERDUB** mode. Whenever **REC** is blinking, any notes played will be added to the current step rather than overwriting all notes in the step. In **OVERDUB** mode, the **ADV** button will simply advance through steps without creating rests.

LIVE RECORD

Press **PLAY** to run the **SEQUENCER**, and then hit **REC** to enter **LIVE RECORD** mode. Pressing **REC** will automatically bring you to the **STEP** view where you can see the chase light moving through the **SEQUENCE** steps. Playing a note or chord will index it onto the step currently lit by the chase light. By default, gate lengths are recorded live, so holding a note or chord down will extend its gate length across multiple steps, however the note data will be contained in the first step of its length. Anytime a note or chord is played in **LIVE RECORD** mode, it will replace whatever exists in the currently lit step.

Holding **INIT** while in **LIVE RECORD** will scrub sequencer data as it runs through the steps, replacing them with rests.

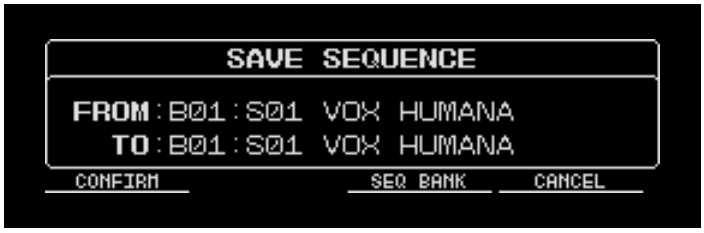
Press **REC** to disable recording. As with **STEP RECORD** mode, holding **INIT** and pressing **REC** will undo any changes to your sequence since you last hit **REC**.

Add overdubs by holding **SHIFT** and hitting **REC** while the sequencer is playing (**REC** will now blink) to enter **LIVE OVERDUB** mode - notes played will be added to the current step rather than overwriting it. If more than 8 notes are added to a step, the oldest notes added will be replaced with the most recently played notes, i.e. the 9th note replaces the 1st, 10th replaces the 2nd, etc.

ARP TO SEQUENCER

Muse's powerful **ARPEGGIATOR** can create intricate rhythmic patterns and those patterns can be recorded into the **SEQUENCER** for saving into memory, recalling later, or further editing and expanding. Simply press **REC** while the **ARPEGGIATOR** is running to begin recording your arpeggios. If in **STEP RECORD** mode, each new note from the **ARPEGGIATOR** will be sequentially indexed into the current sequence, ignoring rests from the **ARPEGGIATOR**. If in **LIVE RECORD** mode, the **SEQUENCER** will capture rests and rhythmic information coming from the **ARPEGGIATOR** as well as note values.

SAVE SEQUENCE



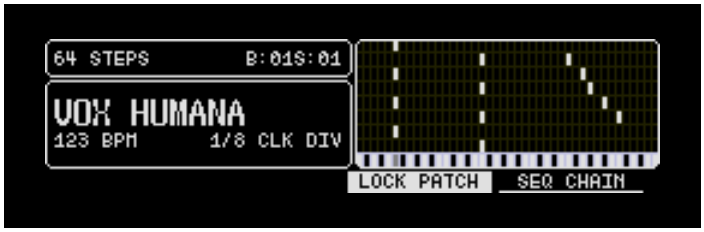
Press **SEQ** in the **PROGRAMMER** to see the sequence you've entered. When you are ready to save it into memory press the **SAVE** button in the **PROGRAMMER** (note that the **SEQ** button in the **PROGRAMMER** must be lit to save the sequence). Confirm the location of your sequence with the 1-16 sequence location buttons and press the **CONFIRM** soft button, which will bring you to a page to edit the name of your sequence. Press the **SAVE SEQ** soft button to save your sequence.

TIP: *Use* ***PATCH LOCK*** *to store a patch reference with the current sequence before saving. This will allow you to load a particular patch anytime you load a particular sequence. Hold* ***SHIFT*** *in the* ***SEQ*** *view and click the* ***LOCK PATCH*** *soft button to lock the current patch with the current sequence. Every time you load this sequence from memory, Muse will ask if you would also like to load its locked* ***PATCH*** *or just the sequence.*

MUSE MODULES *(Cont.)*

SEQUENCER VIEW

Pressing the **SEQ** button in the **PROGRAMMER** will bring up the main interface for controlling the **SEQUENCER**. You will see the name, stored tempo, and length of the current sequence as well as the current **CLOCK DIV** setting. As a sequence plays, it will be visually represented in a piano roll-style animation flowing down right side of the screen.



STEP BUTTONS
Use buttons 1-16 in the **PROGRAMMER** to select a sequence when in the **SEQ** view.

***(SOFT BUTTON)* EDIT NAME**
Allows you to edit the name of the currently selected sequence as indicated by the illuminated step button and sequence name on screen. When **EDIT NAME** is pressed, the first character of the patch name will be highlighted (sequence names have a limit of 12 characters). The **SELECT** encoder selects which character is being edited and the **VALUE** knob changes the selected character. Pressing the **ENTER** button (or clicking the **SELECT** encoder) will confirm the name. While editing names, **INIT** can be used to delete characters and **SHIFT+INIT** can be used to insert spaces.

***(SOFT BUTTON)* ORGANIZE**
Allows you to swap the position of two different sequences. When **ORGANIZE** is pressed you can select a sequence using the step buttons (1-16). The selected button will start to blink, indicating that the sequence is waiting to be moved. Press the step button (1-16) where you would like to move the selected sequence and press ENTER to confirm the move. The two sequences will then swap positions.

NOTE: ORGANIZE** may also be used to organize **SEQ BANKS.

***(SOFT BUTTON)* SEQ BANK**
Allows you to select between 16 banks of sequences using buttons 1-16. Each of the 16 sequence banks contains 16 sequences for a total of 256 available sequences. Sequence banks can be named and moved around just like patch banks by using **EDIT NAME** and **ORGANIZE**. Press the **SEQ BANK** soft button, SEQ, or **BACK** to go back to the main **SEQ** view.

MUSE MODULES *(Cont.)*

***(SOFT BUTTON)* SETTINGS**
Opens the settings menu for the currently selected sequence. Press the **SETTINGS** soft button, **SEQ**, or **BACK** to go back to the main **SEQ** view. Settings are detailed below in **SEQUENCE SETTINGS**.

Hold SHIFT while in the SEQ view to access additional soft button options:

***(SOFT BUTTON)* LOCK PATCH**
Clicking the **LOCK PATCH** soft button will lock the currently active **PATCH** to the currently active **SEQUENCE.** With **LOCK PATCH** enabled, every time you load the current sequence a view will pop up asking if you want to load both the sequence and its locked patch or load only the sequence.

***(SOFT BUTTON)* SEQ CHAIN**
Opens the **SEQ CHAIN** view, allowing you to chain up to 8 sequences from the current **SEQ BANK** together. Pressing any of the sequence location buttons 1-16 will add that sequence to the chain (you can also use the **SELECT** and **VALUE** encoders to change any of the sequences). There is a single **SEQ CHAIN** per bank.

Press **PLAY** to playback the sequence chain – the box with the currently playing sequence will be highlighted. Press **RESET** to immediately reset the chain back to the beginning. Pressing **PLAY** will stop playback and reset the chain back to the first sequence.

CLEAR will clear out the current chain.

ONE SHOT will set the chain to playback once and then stop (default behavior is for the chain to continue looping as long as **PLAY** is on).

RND will load the chain with random sequence selections from the current **SEQ BANK**.

SEQUENCE SETTINGS

SEQ LENGTH (1-64. *DEFAULT: 16)*
Sets the length of the sequence, from 1 step to 64 steps. If sequence steps have been programmed and the sequence length is set to be shorter, those steps that now fall outside the sequence length will still retain their programmed values - so you can change the sequence length on the fly as a performative control.

MUSE MODULES *(Cont.)*

SEQ DIRECTION (FW, BK, FW/BK, RANDOM. *DEFAULT: FW)*
Sets the playback direction of the sequencer to advance forward (**FW**), backward (**BW**), pendulum forward and backward (**FW/BK**), or random (**RANDOM**).

SWING (25%-75%. *DEFAULT: 50%)*
Adds swing to the sequence, shifting off beats a bit later with **SWING** above 50% or a bit earlier with **SWING** below 50%. A **SWING** amount of 50% represents no swing.

SCALE *(DEFAULT: NONE)*
Selects a scale for the sequence which - combined with the **ROOT** setting - will be used to quantize notes when using note probability, gesture record mode, or with pitch quantizing settings enabled.

- **MAJOR**
- **NATURAL MINOR**
- **HARMONIC MINOR**
- **MELODIC MINOR**
- **MINOR BLUES**
- **MAJOR BLUES**
- **MINOR PENTATONIC**
- **MAJOR PENTATONIC**
- **WHOLE TONE**
- **WHOLE-HALF DIMINISHED**
- **HALF-WHOLE DIMINISHED**
- **DORIAN**
- **PHRYGIAN**
- **LYDIAN**
- **MIXOLYDIAN**
- **LOCRIAN**

ROOT (C, C#, D, D#, E, F, F#, G, G#, A, A#, B. *DEFAULT: C)*
Selects a root for the sequence SCALE.

SEQ TIME QUANT *(DEFAULT: OFF)*
Temporarily quantizes all data in the current sequence by note values of either 1/64th, 1/32nd, 1/16th, or 1/8th. Non-destructive, so if quantization is enabled and then disabled, the pre-quantized information is recoverable. Defaults to **OFF** (i.e. full 384th note resolution).

CLOCK DIV (STRGHT, TRIP, DOT, COMBO. *DEFAULT: STRGHT)*
Determines whether the **CLOCK DIV** knob can hit only straight divisions of the global **TEMPO**, only triplet divisions, only dotted note divisions, or a combination of all (**COMBO**)

NOTE PROB RNGE POLARITY (BI-POLAR, UNI-POLAR. *DEFAULT: BI-POLAR)*
Determines whether the range of random notes programmed via the **NOTE PROB RANGE** setting functions in a bi-polar or uni-polar direction. In uni-polar mode notes are only randomly generated above the programmed note – in bi-polar mode notes are allowed to be randomly generated both above and below.

MUSE MODULES *(Cont.)*

STEP VIEW

Pressing the **STEP** button in the **PROGRAMMER** will let you directly edit notes, gate lengths, velocity, timbre allocation, timing, and more for every individual step in your sequence. Use buttons 1-16 in the **PROGRAMMER** to select a step within your sequence and use the **PAGE** buttons in the **SEQUENCER** to toggle between pages for sequences longer than 16 steps.

At the top of the **STEP** view you will see the **STEP** number followed by pages for **NOTE, GATE, VEL, TIME,** and **TIMBRE**. Use the **SELECT** encoder to scroll through these pages for comprehensive editing of the information in each step. Each page has different **SOFT BUTTONS** for advanced programming options.

On the main **STEP** page you will see all the notes in the current step listed. Click any of 1-16 step buttons to move to that step. By holding down the current step button, you can add new notes to the step via the keyboard. Press **INIT** to clear all notes from the current step.

Steps may be copied by first selecting the step, pressing **COPY** (step will flash slowly), selecting the target step, and then pressing **ENTER**. **BACK** may be pressed at any time to back out of the copy procedure. To copy a group of steps, select the first step to be copied, and while holding down **COPY** select the last step to be copied (all selected steps will now flash). Select the first step of the range to be copied to and press **ENTER**.

You may quickly double the current sequence length by holding **SHIFT** and pressing **PAGE RIGHT**. Hold **SHIFT** and press **PAGE LEFT** to halve the current sequence length (this operation is non-destructive and note information will be restored if sequence is relengthened). You may additionally double the current sequence length while duplicating all step information by holding **COPY** and pressing **PAGE RIGHT**. Halving the sequence by holding **COPY** and pressing **PAGE LEFT** is destructive and will permanently delete all step information in the removed section.

(SOFT BUTTON) GESTURE
Enters gesture recording mode – see **GESTURE** below.

(SOFT BUTTON) PARAM REC
Enters parameter recording mode – see **PARAM RECORDING** below.

(SOFT BUTTON) PROB
Opens the probability menu for the current step – see **PROBABILITY** below.

(SOFT BUTTON) SETTINGS
Opens the settings menu for the current sequence – see **SEQUENCE SETTINGS** section above.

Press and hold **SHIFT** to access additional soft button functions:

***(SOFT BUTTON)* COIN TOSS**
Provides access to the **COIN TOSS** note lane, allowing you to load an alternative set of notes (alongside gate lengths, velocities, timing, and timbre assignments) in the current step which can play instead of the programmed notes

MUSE MODULES *(Cont.)*

depending on the **NOTE PROBABILITY** setting. In effect, **COIN TOSS** allows the note probability behavior to randomly "flip a coin" on a particular step that contains **COIN TOSS** data, resulting in either a step playing note data from the main lane or the coin toss lane.

For example, if you recorded a C minor triad into the main lane on a particular step, and a C minor 1st inversion triad into the coin toss lane on the same step, with a note probability of 50% for that step, you'll get a 50/50 chance of either of the chords playing, while 0% will result in the minor triad playing, and 100% will result in the 1st inversion playing.

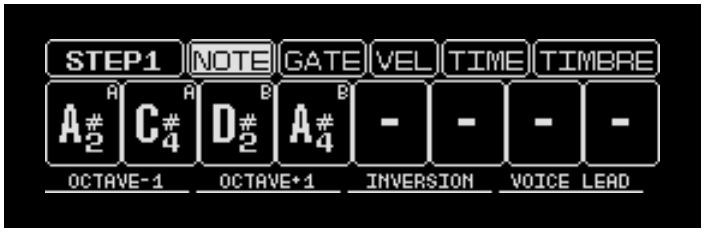
With **COIN TOSS** selected, hold the current step button (1-16) to load your alternative set of notes in for this sequence. To clear out the **COIN TOSS**, press **INIT** while **COIN TOSS** is selected. See the **PROBABILITY** section below for more information.

***(SOFT BUTTON)* SEQ VIEW**
Displays the current sequence graphically in the style of a piano roll as when in the **SEQ** view (but with an expanded visible note range).

***(SOFT BUTTON)* FOLLOW**
Allows the sequencer **STEP** view to follow the **SEQUENCER** when playing – updating and displaying the current **STEP** as the **SEQUENCER** runs. The **PAGE** button in the **SEQUENCER** will also update when **FOLLOW** is enabled for sequences longer than 16 steps.

NOTE

The **NOTE** page allows you to edit the notes on the current step of your sequence. Each step can have up to eight notes (reflecting Muse's eight voices). As on the main **STEP** page, you can hold down the 1-16 button corresponding to the current step to replace notes in the current step via the keyboard, or press **INIT** to delete all notes from the current step.



Move the **VALUE** encoder while **NOTE** is highlighted to move all notes on the current step up or down a semitone. Press down on the **SELECT** encoder and you can select notes individually for editing (press and hold **SHIFT** while turning **SELECT** to select more than one note within the current **STEP** for editing). Pressing the **SELECT** encoder once more when highlighting an individual note will set the note blinking – allowing you to edit the note via the keyboard. Double-clicking **SELECT** while an individual note is highlighted will delete the current note, and double-clicking **SELECT** again will restore that deleted note. If a note location which never had any notes assigned to it is double-clicked, the root note of the scale (assigned via **SEQUENCER SETTINGS**) will be assigned. Press **BACK** to exit individual note editing.

***(SOFT BUTTON)* OCTAVE –1**
Transposes notes down by an octave – either all notes in the step, or the highlighted note(s) when using **SELECT** to select notes individually.

MUSE MODULES *(Cont.)*

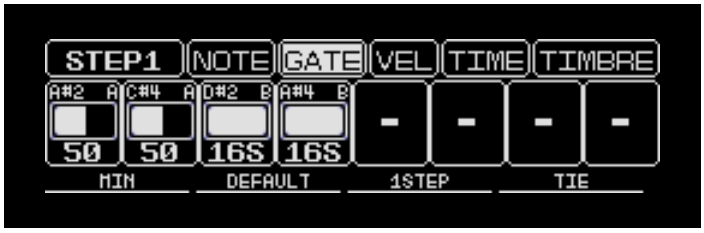
***(SOFT BUTTON)* OCTAVE +1**
Transposes notes up an octave – either all notes in the step, or the highlighted note(s) when using **SELECT** to select notes individually.

***(SOFT BUTTON)* INVERSION**
Inverts the current chord – taking the lowest note in the chord and moving it up an octave. Successive **INVERSION** operations will continue moving the lowest note up an octave until the upper limit of Muse's keyboard is reached. Press **SHIFT** + **INVERSION** to invert the chord downwards – taking the highest note in the chord and moving it down an octave.

***(SOFT BUTTON)* VOICE LEAD**
Rearranges all note values in the current step and sorts them from left to right in ascending order.

GATE

The **GATE** page displays the gate lengths of all notes in the current step. Move the **VALUE** encoder to increase/decrease the gate lengths of all notes. Press down on the **SELECT** encoder and you can select notes individually for editing (press and hold **SHIFT** while turning **SELECT** to select more than one note within the current **STEP** for editing). Press **BACK** to exit individual gate length select. Gate lengths may be set anywhere from a minimum of 1 to 100 as a percentage of the step length, or from the full step length (1S) up to the max length of the current sequence.



Soft button operations below will apply to all gate lengths in the step or the highlighted gate length(s) when using **SELECT** to select gate lengths either individually or in groups.

***(SOFT BUTTON)* MIN**
Sets gate length to a minimum value of 1.

***(SOFT BUTTON)* DEFAULT**
Sets gate length to the **DEFAULT GATE LENGTH** value as configured in the **SEQUENCER MORE** menu.

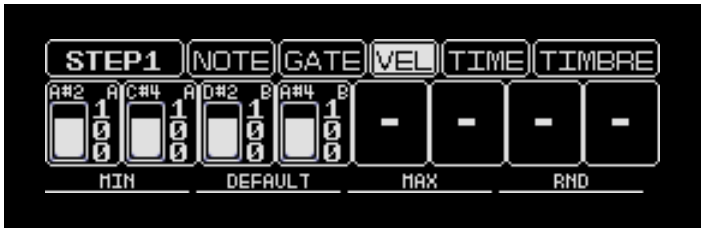
***(SOFT BUTTON)* 1STEP**
Sets gate length to a maximum value of 1S (i.e. the entire length of the step).

(SOFT BUTTON) TIE
Sets gate length to a maximum value of 1S (i.e. the entire length of the step) and will not retrigger the envelopes of that voice in the next step.

***(SOFT BUTTON)* RND**
Hold **SHIFT** and the **RND** soft button will appear in place of **TIE** – sets gate length to a random value.

MUSE MODULES *(Cont.)*

VEL



The **VEL** page displays the velocity values of all notes in the current step – anywhere from 1 to 127. Move the **VALUE** encoder to increase/decrease the velocity values of all notes. Press down on the **SELECT** encoder and you can select notes individually for editing (press and hold **SHIFT** while turning **SELECT** to select more than one note within the current **STEP** for editing). Clicking **SELECT** once more while highlighting the velocity value of an individual note will allow you to play in a new velocity value via the keyboard. Press **BACK** to exit individual velocity value editing.

Soft button operations below will apply to all velocity values in the step or the highlighted velocity value(s) when using **SELECT** to select them individually.

***(SOFT BUTTON)* MIN**
Sets velocity value to a minimum of 1.

***(SOFT BUTTON)* DEFAULT**
Sets velocity value to the **DEFAULT VELOCITY** value as configured in the **SEQUENCER MORE** menu.

***(SOFT BUTTON)* MIN**
Sets velocity value to a maximum of 127.

***(SOFT BUTTON)* RND**
Sets velocity values to a random value between 1 and 127.

TIME

The TIME page allows for microtiming editing of every note in the current step of the sequence. The timing resolution of Muse is one 384th note (assuming **SEQ CLK DIV** is set to 1/16th notes), meaning there are 23 different microtiming subdivisions available in between every 16th note. Move the **VALUE** encoder to shift all notes forward or back in time by one subdivision. Press down on the **SELECT** encoder and you can select notes individually for editing (press and hold **SHIFT** while turning **SELECT** to select more than one note within the current **STEP** for editing). Press **BACK** to exit individual/group timing editing.

Soft button operations below will apply to all timing values in the step or the highlighted timing value when using **SELECT** to select notes individually.

***(SOFT BUTTON)* -4**
Jumps timing values back in time by 4 subdivisions.

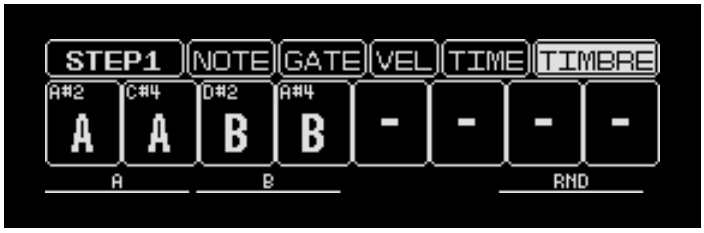
***(SOFT BUTTON)* RESET**
Resets timing values to be on beat.

***(SOFT BUTTON)* +4**
Jumps timing values forward in time by 4 subdivisions.

***(SOFT BUTTON)* RND**
Shifts timing values forward or backward in time by a random value.

TIMBRE

The **TIMBRE** page displays which **TIMBRE** (**A** or **B**) each note on the current step is allocated to. Press the **SELECT** encoder to be able to select and edit the timbre of each note individually or press and hold **SHIFT** while turning **SELECT** to select more than one note within the current **STEP** for editing.



Soft button operations below will apply to all timbre values in the step or just the highlighted note when using **SELECT** to select notes individually.

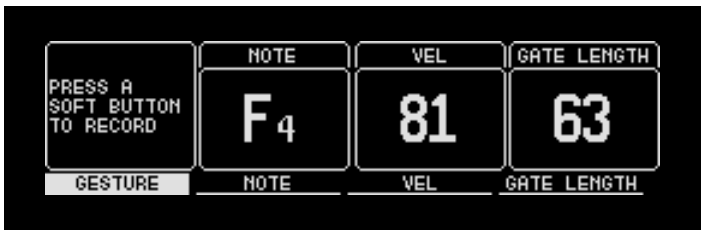
***(SOFT BUTTON)* A**
Sets to TIMBRE A.

***(SOFT BUTTON)* B**
Sets to TIMBRE B.

***(SOFT BUTTON)* RND**
Sets to a random **TIMBRE** either **A** or **B**.

GESTURE

Selecting the **GESTURE** soft button will enter gestural recording mode, allowing you to use the **VALUE** encoder to quickly enter note information. The **GESTURE** page features a soft button for **NOTE, VEL,** and **GATE LENGTH,** giving you a fun and intuitive way to enter sequence data or change sequence parameters on the fly.



While **REC** is enabled, holding down one of these soft buttons will replace the **NOTE, VEL,** or **GATE LENGTH** information the current step with what is displayed on the **GESTURE** page. Hold **NOTE** (for example) while the sequencer is running and **REC** is enabled and you can use the **VALUE** encoder to quickly enter notes gesturally. Entering **NOTE**s via gesture record will overwrite all note information as the sequencer moves through, while holding **SHIFT + REC** to enter overdub mode will add the gesturally input notes on top of the current sequence. Rewriting **VEL** and **GATE LENGTH** information via gestural recording will update velocity and gate length information for all notes on the current step.

PARAMETER RECORDING

Selecting the **PARAM REC** soft button opens the parameter recording view, allowing you to store up to eight panel control parameter values per step. With parameter recording, you can sequence up to eight panel controls directly from the sequencer for rhythmic tonal changes and patch modulations.

In **LIVE RECORD** mode (**PLAY** and **REC** on),
press the **PARAM REC** soft button to enter the parameter recording view — as you adjust a panel control its value will be saved per step. You may also update parameter recording values step-by-step in **STEP RECORD** mode (with **REC** on and the sequencer not running).

Parameter recording stores a single value per panel control per step, so it will naturally produce “stepped” parameter changes from one step to the next. Up to eight parameters can be recorded per sequence – the ninth parameter recorded will replace the first on the **PARAM REC** view and so on.

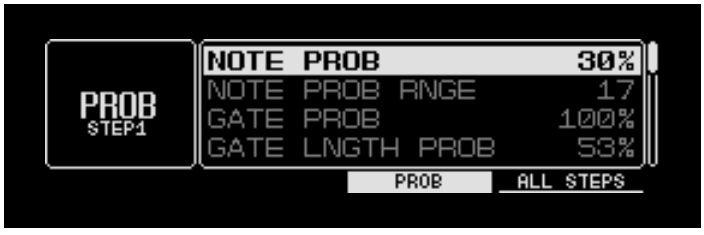
***(SOFT BUTTON)* CLEAR ALL**
Clears all parameter recording data from the sequence.

***(SOFT BUTTON)* CLEAR PARAM**
Clears the currently highlighted parameter value on the current step.

***(SOFT BUTTON)* CLEAR STEP**
Clears all parameter values for the current step.

PROBABILITY

Selecting the **PROB** soft button opens the probability settings view, allowing you to add random fluctuations and chance operations to your sequence. Probability settings are stored per step, so you can program anything from a single randomly changing step in your sequence to intricate, unstable changes throughout your sequence or completely random chaos.



Use **TIMBRE A / TIMBRE B** soft buttons to edit probability settings for each TIMBRE separately.

MUSE MODULES *(Cont.)*

Enable the **ALL STEPS** soft button at the bottom-right of the probability settings view to apply changes to all steps in the current sequence.

NOTE PROB
Probability of NOTE randomization for the current step from 0% to 100%. Note probability will function in a few different ways based on what information is in the current step:

- **Single NOTE**
  A randomly generated note will be selected based on the **ROOT** and **SCALE** settings of the sequence (found in the **SEQUENCER MORE** menu) and the **NOTE PROBABILITY RNGE** below.
- **Multiple NOTEs**
  All notes in the step will be treated as a chord, and a random inversion or voicing will be generated for that chord based on the **NOTE PROB RNGE**.
- **Coin Toss**
  If an alternate note or set of notes has been entered into the **COIN TOSS** page for any steps (see **COIN TOSS** above), that alternate note or set of notes will randomly play based on the probability setting. Set to 100% the **COIN TOSS** notes will always play, while set to 0% the main programmed notes will always play - allowing you to balance the likelihood of either group of notes playing based on which side of 50% **NOTE PROB** is set.

NOTE PROB RNGE
Sets the range in semitones that the generated randomized note can deviate from the programmed note. Can be set up to 5 octaves away (limited by the total range of Muse's keyboard) and can be either unipolar or bipolar depending on the **NOTE PROB RNGE POLARITY** setting in the **SEQUENCER MORE** menu. On steps with multiple notes, **NOTE PROB RANGE** is rounded to the nearest octave and used to bound randomized chord voicings.

GATE PROB
Probability that the current step plays its note information – from 100% probability down to 0%.

GATE LNGTH PROB
Probability that the gate length information in the current step will deviate from its programmed value – from 0% to 100% probability.

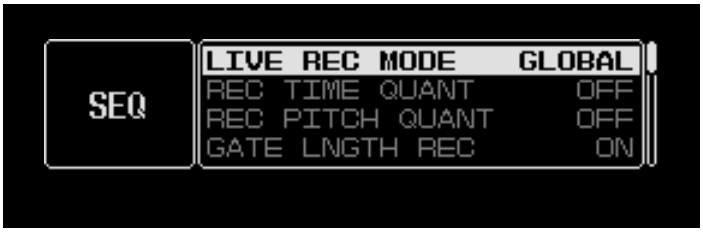
GATE LNGTH PROB RNGE
Determines how far randomized gate lengths are allowed to deviate from the programmed gate length – from 0 to 100.

VELOCITY PROB
Probability that the velocity information in the current step will deviate from its programmed value – from 0% to 100% probability.

VELOCITY PROB RNGE
Determines how far randomized velocities are allowed to deviate from the programmed velocity – from 0 to 127.

SEQUENCER MORE MENU

The SEQUENCER's MORE MENU is unique in that its settings are non-volatile and will be retained across power cycles.



MUSE MODULES *(Cont.)*

LIVE REC MODE (GLOBAL/TIMBRE.
DEFAULT: GLOBAL)
Configures how **LIVE RECORD** mode handles
notes with different timbres. In **GLOBAL** mode,
all note information in a current step is overwritten in **LIVE RECORD** mode. In **TIMBRE** mode, only the notes in the currently selected timbre are overwritten in **LIVE RECORD** mode – notes assigned to the other timbre are kept. In the event of a voice count conflict, notes in the other timbre will be removed to make room for newly entered notes.

REC TIME QUANT *(DEFAULT: OFF)*
Enables and sets time quantization for **LIVE RECORD** mode. Timing quantization can be set to note values of 1/64th, 1/32nd, 1/16th, or 1/8th. Defaults to **OFF** (i.e. full 384th note resolution).

REC PITCH QUANT (ON/OFF. *DEFAULT: OFF)*
Enables pitch quantization for **LIVE RECORD** mode. While in **LIVE RECORD** mode, any notes entered that fall outside the current sequence's **ROOT** and **SCALE** settings (set in the **SEQUENCE SETTINGS** menu) will be nudged upwards to the nearest valid note.

GATE LNGTH REC (ON/OFF. *DEFAULT: ON)*
Enables recording of gate length information via the keyboard or external MIDI controller when in **LIVE RECORD** mode. If **OFF**, gate lengths all default to **DEFAULT GATE LENGTH.**

DEFAULT GATE (1-100. *DEFAULT: 50)*
Sets **DEFAULT GATE LENGTH** value for use throughout the **SEQUENCER**.

DEFAULT VEL (1-127. *DEFAULT: 100)*
Sets **DEFAULT VELOCITY** value for use throughout the **SEQUENCER**.

RESET ON STOP (OFF/ON. *DEFAULT: ON)*
If enabled, stopping the sequencer via the **PLAY** button will reset it.

TRANSPOSE (OFF/ON. *DEFAULT: OFF)*
Enables sequence transposition via the keyboard (or external MIDI controller) during sequence playback. If enabled, middle C is the default un-transposed position.

ADV QUANT *(DEFAULT: 1/16)*
Quantizes the press of the **ADV** button while the sequence plays to either a 1/16th , 1/8th, 1/4, or 1/2 note. This can allow you to offset the phase of notes in your sequence against a clock source while ensuring you're not unintentionally shifting the sequence's clock phase off the grid when doing so.

SEQ CHAIN DIR *(DEFAULT: FW)*
Configures the order in which the **SEQ CHAIN** is played – either forward (**FW**), backward (**BW**), pendulum (**FW/BK**), or random (**RANDOM**).

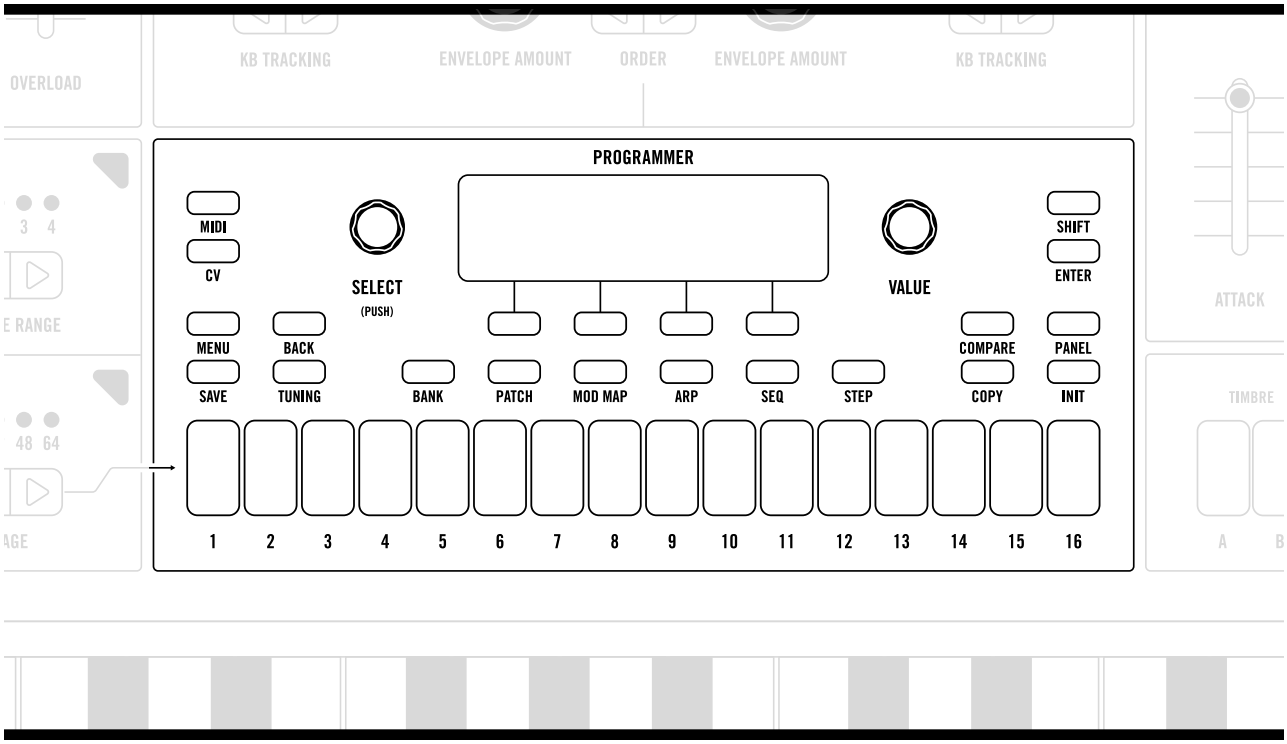
SEQ CHANGE (END OF SEQ/IMMEDIATE. *DEFAULT: END OF SEQ)*
Configures whether a newly selected sequence is loaded immediately or at the end of the currently playing sequence.

MUSE MODULES *(Cont.)*

PROGRAMMER

The **PROGRAMMER** is the central hub for interacting with Muse. It is where you will find the preset manager (**BANK/PATCH**), where you will program modulation via the **MOD MAP**, and where you can program the **ARPEGGIATOR** and **SEQUENCER (SEQ/STEP)**. The **PROGRAMMER** also gives access to Muse's configuration menus, MIDI/CV settings, and is where you will navigate settings for the MORE menus found throughout Muse.

In the center of the **PROGRAMMER** you will find the main interface screen, the **SELECT** and **VALUE** encoders, and four soft buttons directly below the screen whose function changes depending on what is on screen. Below them are six buttons for navigating between the main **PROGRAMMER** base states – **BANK, PATCH, MOD MAP, ARP, SEQ,** and **STEP** – which will be described later in this section.

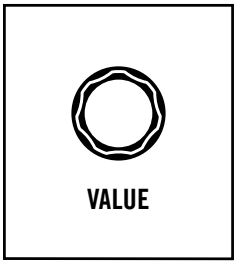


NAVIGATION

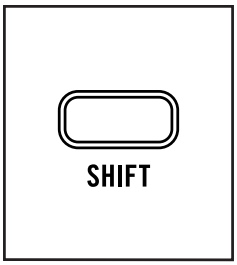
SELECT

The **SELECT** knob is an endless encoder that allows you to select various values on screen to adjust by highlighting the value with a 'selector box'. In a vertically oriented menu turning the knob clockwise will move the selector box down, and counterclockwise will move the box up. In a horizontally oriented menu, turning clockwise will move the selector box to the right, and counterclockwise will move the box to the left. (Clicking the **SELECT** knob serves the same function as the **ENTER** button, which can make certain programmer focused tasks more convenient).

MUSE MODULES *(Cont.)*

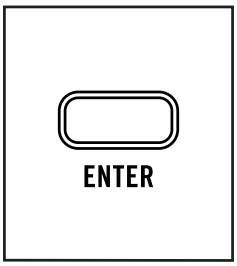


VALUE
The **VALUE** knob is an endless encoder that allows you to adjust the values highlighted by the **SELECT** knob.

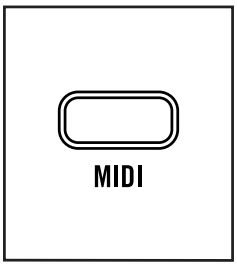


SHIFT
The **SHIFT** button allows you to make fine adjustments or access certain secondary functions on the panel or via soft buttons. Quick press **SHIFT** to latch it on - holding **SHIFT** for more than 500 milliseconds will function as a momentary switch. Once **SHIFT** is disabled the panel and screen will revert back to their primary functions.

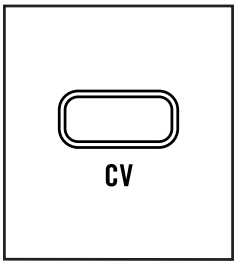
TIP: *If using the* ***MODULATION OSCILLATOR*** *as a third audio oscillator you may want to use* ***SHIFT*** *functionality to more precisely tune it to the two main oscillators. Press* ***HOLD*** *and press a key, turn up the oscillators in the* ***MIXER****, and use the* ***FREQUENCY*** *knob in the* ***MODULATION OSCILLATOR*** *to tune it roughly to where you want it. Then hold* ***SHIFT*** *down and continue adjusting* ***FREQUENCY*** *for fine tuning.*



ENTER
The **ENTER** button is used anytime confirmation is needed on screen. This can be pressed to enter certain sub-menus, or to confirm the saving of a preset. (The **SELECT** knob can also be pressed to accomplish the same task at any time).

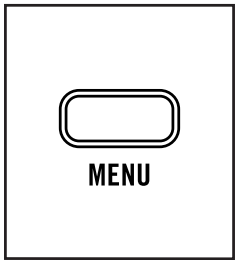


MIDI
Opens the MIDI menu – see **SETTINGS** section below.

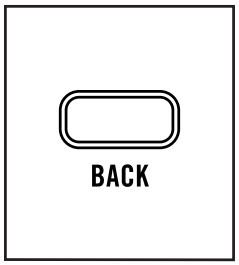


CV
Opens the Control Voltage (CV) settings menu – see **SETTINGS** section below.

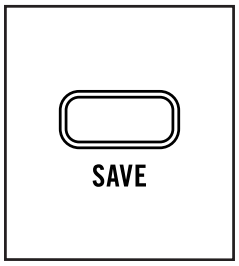
MUSE MODULES *(Cont.)*



MENU
Opens the global settings menu - see **GLOBAL SETTINGS** section below.



BACK
Backs out of any menus to one of the six **PROGRAMMER** base states.

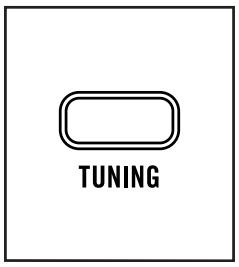


SAVE
The **SAVE** button allows you to save the current **PATCH** or **SEQUENCE**. Each **PATCH** will contain **ARP** and **MOD MAP** information when saved. Each **SEQUENCE** will contain **STEP** information when saved.

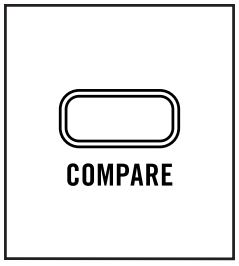
TIP: *If the patch lock function is engaged within a* ***SEQUENCE*** *you can include a stored* ***PATCH*** *to be loaded with that* ***SEQUENCE****.*

To save information, press the **SAVE** button - one of the **PROGRAMMER** buttons (1-16) will blink to indicate the destination of the saved **PATCH** or **SEQUENCE**. Pressing any other **PROGRAMMER** button 1-16 will change the save location, with that respective location now blinking. When in **SAVE** mode, moving between **BANKS** or pressing any other location button won't load a new **PATCH/SEQUENCE** but rather change the location for saving the current **PATCH/SEQUENCE**.

Further information for saving a **PATCH** or **SEQUENCE** can be found in their respective sections later in this manual.

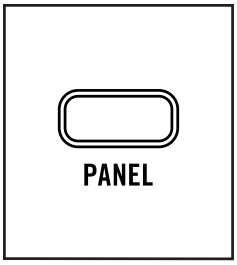


TUNING
Opens the **TUNING** menu – see **SETTINGS** section below.

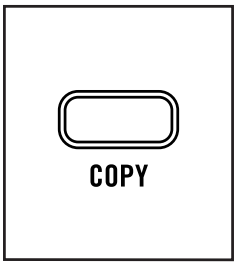


COMPARE
Allows you to compare a saved **PATCH** with an edited one. With a **PATCH** loaded, any changes made to it will be indicated by an asterisk (*) next to the **PATCH** name. Press **COMPARE** (button LED lit) and you will hear the **PATCH** as saved in memory. With **COMPARE** unlit you will hear the edited version.

MUSE MODULES *(Cont.)*

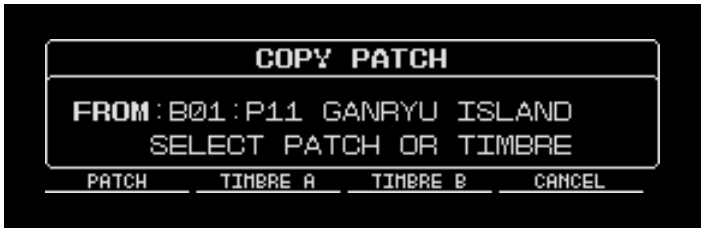


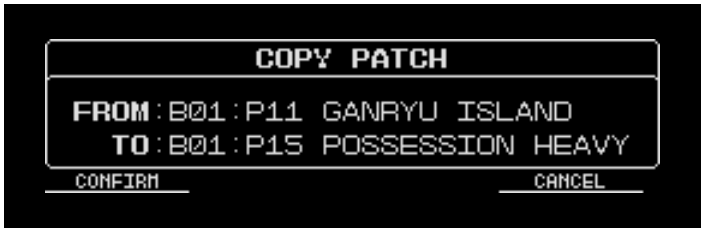
PANEL
Overrides all preset knob and slider states in the currently selected **PATCH** and reverts to the settings currently expressed by the panel controls. This will have no effect on the **MORE** menu settings of a patch.



COPY
Copies information within the various **PROGRAMMER** base states. It works the same way across the **BANK, PATCH,** and **MOD MAP** pages. With a location button selected, press **COPY** to store the currently selected **BANK, PATCH**, etc. into a buffer – indicated by the current location button blinking. Press a new location button corresponding to the location you wish to paste to (which will now begin blinking) and press **ENTER** to confirm.

BANK
Please note that this action is destructive and will overwrite saved data, so proceed with caution! Press **COPY** with **BANK** in the **PROGRAMMER** selected and the current **BANK** location will begin to blink. Press the location button corresponding to the target **BANK**, which will set that location blinking as well. Press **ENTER** to confirm the copy.





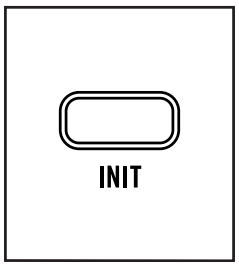
PATCH
Press **COPY** with **PATCH** in the **PROGRAMMER** selected and you will be asked to select the source **PATCH** for copying (you may press **BANK** to switch the **BANK** for the source **PATCH**). Select a **PATCH**, and you will be asked if you want to copy the entire **PATCH**, only **TIMBRE A**, or only **TIMBRE B**.

Make your selection, and you will be asked to select a target **PATCH** location (you may press **BANK** to change the target **BANK**). If you are only copying a single **TIMBRE**, you can select which **TIMBRE** (**A** or **B**) in the target **PATCH** to copy the source **TIMBRE** to. Press **CONFIRM** to confirm the copy. This action is non-destructive and requires an explicit SAVE operation to overwrite saved data.

MOD MAP
Press **COPY** with a mod slot in the **MOD MAP** selected and the source mod slot will start blinking. You may select any number of target mod slots with the location 1-16 buttons – press **ENTER** to confirm.

STEP
Press **COPY** with a step in the sequencer **STEP** view selected and the source step will start slowly flashing. Select the target step and press **ENTER** to confirm. To copy a group of steps, select the first step to be copied and while holding down **COPY** select the last step to be copied (all selected steps will now flash). Select the first step of the range to be copied to and press **ENTER** to confirm. You may **BACK** out of copy operations at any time.

MUSE MODULES *(Cont.)*



INIT
Initializes a **BANK, PATCH, MOD MAP, SEQUENCE,** or **STEP** depending on which function is currently being addressed by the **PROGRAMMER**. Initialization will revert back to a neutral 'un-programmed' state:

BANK
INIT will clear out the current **BANK**.

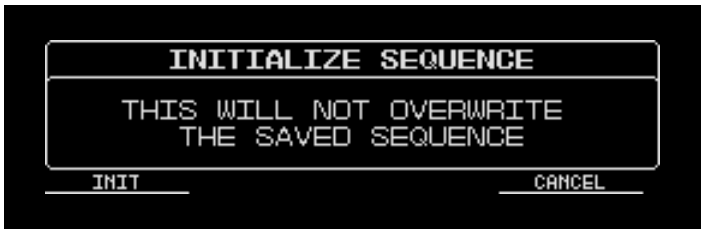
PATCH
INIT will revert either **TIMBRE A**, **TIMBRE B**, or the entire patch to the initialized patch. This will not overwrite the saved patch.

MOD MAP
INIT will initialize the current slot in the **MOD MAP**.

ARP
INIT will initialize the **ARPEGGIATOR** settings.

SEQ
INIT will initalize the currently selected sequence. This will not overwrite the saved sequence.

STEP
INIT will clear all data in the current **STEP**.



When the **INIT** button is pressed to initialize either a **BANK, PATCH,** or **SEQ,** a confirmation requiring users to press **ENTER** will appear on the screen to prevent accidental deletion of information.

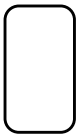
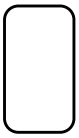
MUSE MODULES *(Cont.)*

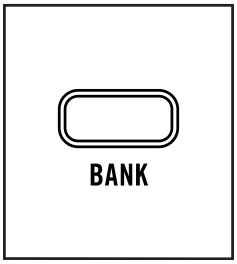
BANK/PATCH

The **BANK** and **PATCH** buttons are the main interfaces for patch storage and management in Muse. A **PATCH** is a stored set of panel settings, **MOD MAP** routings, and expressivity controls that make up a unique sound. Saving a patch allows you to instantly recall any sound you have made on Muse. Each patch contains two separate timbres and all **VOICE CONTROL** settings are saved on a per-patch basis.

A **BANK** is a collection of up to 16 patches, and Muse can contain a total of 16 separate banks. Banks can be organized so that when the **PROGRAMMER** is in **PATCH** mode you can quickly switch between patches that are most useful to you. Put all the patches for a particular live gig in one **BANK** for easy access or organize your patches into different banks based on mood, feel, specific projects, or whatever makes the most sense to you!

To load patch 14 in bank 5 (for example):

BANK/PATCH			
 BANK	 5	 PATCH	 14
❶ Press **BANK** to focus the **PROGRAMMER** on the **BANK** view	❷ Press location button 5 to switch to **BANK** number 5	❸ Press **PATCH** to focus the **PROGRAMMER** on the PATCH view	❹ Press location button 14 to load **PATCH** number 14



BANK
Puts the **PROGRAMMER** in **BANK** view, allowing you to select between 16 banks of patches using the location buttons (1-16). Each of the 16 banks contains 16 patches (for a total of 256 available patches). Each bank can be named by the user for categorization purposes.

***(SOFT BUTTON)* EDIT NAME**
Allows you to edit the name of the currently selected bank as indicated by the illuminated step button and **BANK** # on screen. When **EDIT NAME** is pressed, the first character of the bank name will be highlighted. The **SELECT** encoder selects which character is being edited and the **VALUE** knob changes the selected character. Pressing the **ENTER** button (or clicking the **SELECT** encoder) will confirm the name.

***NOTE: BANK** names are limited to 9 characters.*

MUSE MODULES *(Cont.)*

***(SOFT BUTTON)* ORGANIZE**
Allows you to swap the position of two different banks. When **ORGANIZE** is pressed you can select a bank using the step buttons (1-16). The selected button will start to blink, indicating that the bank is waiting to be moved. Press the step button (1-16) where you would like to move the selected bank and press **ENTER** to confirm the move. The two banks will then swap positions.

***NOTE:** Moving a bank will change the **BANK** #, but banks will retain any stored names.*

PATCH
Puts the **PROGRAMMER** in **PATCH** mode,
allowing you to select between the 16 patches in the current bank using the location buttons (1-16). Each patch can be named by the user for categorization purposes.

When in the **PATCH** base state you may use the **SELECT** encoder to scroll through patches in the current bank.

***(SOFT BUTTON)* EDIT NAME**
Allows you to edit the name of the currently selected patch as indicated by the illuminated step button and patch name on screen. When **EDIT NAME** is pressed, the first character of the patch name will be highlighted. The **SELECT** encoder selects which character is being edited and the **VALUE** knob changes the selected character. Pressing the **ENTER** button (or clicking the **SELECT** encoder) will confirm the name.

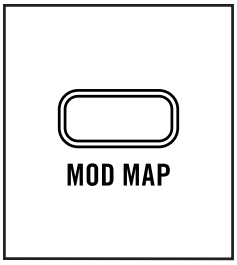
***(SOFT BUTTON)* ORGANIZE**
Allows you to swap the position of two different patches. When **ORGANIZE** is pressed you can select a patch using the step buttons (1-16). The selected button will start to blink, indicating that the patch is waiting to be moved. Press the step button (1-16) where you would like to move the selected patch and press **ENTER** to confirm the move. The two patches will then swap positions.

***(SOFT BUTTON)* ARRANGEMENT**
Brings up the **ARRANGEMENT** view, displaying all timbres across all the patches in the current **BANK** and allowing you to select timbres from two different patches.

NOTE:** Using **ARRANGEMENT** is non-destructive and requires an explicit **SAVE** operation to store the selected **TIMBRES** as a new **PATCH.

MUSE MODULES *(Cont.)*

MOD MAP



The **MOD MAP** is where all assignable modulation settings are created and stored and allows for deep and complex routing of modulation signals throughout Muse.

Modulation routings can be assigned in the **MOD MAP** in two ways – via quick assign using the **ASSIGN** buttons found on Muse's modulation sources, or via direct programming in the **MOD MAP**. Refer to the **ASSIGNABLE CONTROLLERS** section for an overview of the quick assign procedure.

Pressing the **MOD MAP** button puts the **PROGRAMMER** in **MOD MAP** mode, allowing you to select between 16 different modulation slots using the location buttons (1-16). Within a modulation location, use the **SELECT** encoder to select a parameter for adjustment, and the **VALUE** encoder to scroll through the available options. The currently selected modulation slot will be brightly lit, while other modulation slots containing modulation routings will be dimly lit. Currently unused modulation slots will be unlit.

Each timbre in a patch has 16 available modulation slots. Each slot contains a **SOURCE** of modulation and a **DESTINATION**. Each slot can further contain a **CONTROLLER** for scaling the modulation, and a **FUNCTION** transform which will apply a transform function to the modulation **SOURCE, CONTROLLER,** or **BOTH**. It's important to note that the summed value of the **CTRL** and **DEST** boxes cannot exceed 100 or go below –100.

TIP: *When using the* ***VALUE*** *encoder to adjust* ***FUNC, CNTRL,*** *and* ***DEST*** *amounts you can hold* ***SHIFT*** *to engage fine tuning of modulation amounts.*

(SOFT BUTTON) **SOLO**
Allows you to audition the effect a particular modulation slot has on its own. With **SOLO** pressed all other modulation slots will be temporarily disabled.

(SOFT BUTTON) **FUNC DEST**
Selects the target function destination for the transform function – either **SOURCE, CONTROLLER, BOTH** or **NONE**. The current function destination is displayed above the **FUNC** column.

(SOFT BUTTON) **MUTE**
Temporarily disables the current modulation slot.

MUSE MODULES *(Cont.)*

SOURCE
Selects the source of modulation. You may select a source by either scrolling through them with the **VALUE** encoder or pressing down on the **SELECT** with the source section highlighted (will begin blinking) and pressing the **ASSIGN** button corresponding to the desired source. Available modulation sources are:

- **LFO 1 (UNI)**
- **LFO 1 (BI)**
- **LFO 2 (UNI)**
- **LFO 2 (BI)**
- **PITCH LFO (UNI)**
- **PITCH LFO (BI)**
- **RAND TRIG (UNI)** (unipolar random value that changes with every key press)
- **RAND TRIG (BI)** (bipolar random value that changes with every key press)
- **VCF EG**
- **VCA EG**
- **KEYBOARD**
- **GATE**
- **TRIG**
- **VELOCITY**
- **AFTER TOUCH**
- **MACRO (UNI)**
- **MACRO (BI)**
- **MOD WHEEL (UNI)**
- **MOD WHEEL (BI)**
- **G LFO1 (UNI)**
- **G LFO1 (BI)**
- **G LFO2 (UNI)**
- **G LFO2 (BI)**
- **G EG 1**
- **G EG 2**
- **G RAND TRIG 1 (UNI)**
- **G RAND TRIG 1 (BI)**
- **G RAND TRIG 2 (UNI)**
- **G RAND TRIG 2 (BI)**
- **EXPRESSION PEDAL**
- **SUSTAIN PEDAL**
- **CV IN 1**
- **CV IN 2**
- **OFFSET (range is 2 octaves)**

FUNCTION
Applies a transform function to a target signal (selectable via the **FUNC DEST** soft button – either the **SOURCE**, the **CONTROLLER**, or **BOTH**). Available functions are:

SLEW
Slews the signal coming from the target, smoothing out sudden changes and slowing down movement. Amount increases slew time.

CUBIC
Applies waveshaping to the target signal via a cubic function. Amount represents a mix between input signal and waveshaped output.

EXPONENTIAL
Applies waveshaping to the target signal via an exponential function. Amount represents a mix between input signal and waveshaped output.

MUSE MODULES *(Cont.)*

LOGARITHMIC
Applies waveshaping to the target signal via a logarithmic function. Amount represents a mix between input signal and waveshaped output.

COMPARATOR
Generates a gate from the target signal. When the signal exceeds a certain threshold, the resulting gate will be high – otherwise it is low. Amount sets the threshold level.

MAX CLIP
Clips the top of the target signal, preventing it from exceeding a certain threshold. Amount sets the clipping threshold.

MIN CLIP
Clips the bottom of the target signal, preventing it from dipping below a certain threshold. Amount sets the clipping threshold.

SYMMETRICAL CLIP
Symmetrically clips the top and bottom of the target signal. Amount sets the clipping threshold but will have half the range of the **MAX CLIP** or **MIN CLIP** functions as it is applied to the top and bottom of the signal simultaneously.

TIP: *A nice way of creating trapezoidal **LFO**s from triangle **LFO**s!*

SCALE
Scales the target signal, attenuating it at lower amount settings and amplifying it at higher amount settings. An amount setting of around 14 represents unity gain, with attenuation down to zero below that and amplification up to 7 times the input at an amount of 100.

FADE A
Applies an attack-only fade in to the target signal. Amount sets fade in (attack) time from note onset.

FADE D
Applies a decay-only fade out to the target signal. Fade out begins from note onset and ignores if note is sustained or not. Amount sets decay time.

FADE R
Applies a release-only fade out to the target signal. Fade out begins from end of sustain stage (note off). Amount sets release time.

FADE AR
Applies an attack-release fade in/out to the target signal, fading in starting at note onset and fading out starting at end of sustain stage (note off). Amount sets both attack and release time simultaneously.

MAX
Logic function that compares the **SOURCE** and **CONTROLLER**, outputting whichever of the two signals is highest at any given time. With a logic function selected the **FUNC DEST** soft button is disabled and set to **BOTH**.

MIN
Logic function that compares the **SOURCE** and **CONTROLLER**, outputting whichever of the two signals is lowest at any given time. With a logic function selected the **FUNC DEST** soft button is disabled and set to **BOTH.**

SUM - Logic function that adds the **SOURCE** and **CONTROLLER** signals together, resulting in a complex modulation signal. With a logic function selected the **FUNC DEST** soft button is disabled and set to **BOTH**.

DIFF
Logic function that subtracts the **CONTROLLER** signal from the **SOURCE** signal, resulting in a complex modulation signal. With a logic function selected the **FUNC DEST** soft button is disabled and set to **BOTH**.

MULTIPLY
Logic function that multiplies the **SOURCE** and **CONTROLLER** signals together, resulting in a complex modulation signal. With a logic function selected the **FUNC DEST** soft button is disabled and set to **BOTH**.

CONTROLLER

Selects a controller for the modulation routing. You may select a controller by either scrolling through them with the **VALUE** encoder or pressing down on the **SELECT** with the controller section highlighted (will begin blinking) and pressing the **ASSIGN** button corresponding to the desired controller.

Controllers allow you to use a physical expression controller (Modulation Wheel, Aftertouch, etc.) or a second modulation source (LFOs, Envelopes, etc.) to scale the modulation amount dynamically.

For example: assigning the Modulation Wheel (in UNIpolar mode) as a controller with an amount of 100 will attenuate the modulation effect fully when the wheel is all the way down and increase the modulation depth to 100% when the wheel is fully up – allowing you to control the amount of modulation with your hand. Setting the Controller amount negative will invert the effect – attenuating or even inverting modulation as the controller is increased.

Note that this controller amount is summed with the amount of modulation routed direct to the destination and the sum of the two values cannot exceed 100 or go below -100. If the controller modulation amount is set to 10%, then the most modulation that can be sent direct to the destination is 90%.

Available modulation controllers are:

- **LFO 1 (UNI)**
- **LFO 1 (BI)**
- **LFO 2 (UNI)**
- **LFO 2 (BI)**
- **PITCH LFO (UNI)**
- **PITCH LFO (BI)**
- **RAND TRIG (UNI)** (unipolar random value that changes with every key press)
- **RAND TRIG (BI)** (bipolar random value that changes with every key press)
- **VCF EG**
- **VCA EG**
- **KEYBOARD**
- **GATE**
- **TRIG**
- **VELOCITY**
- **AFTER TOUCH**
- **MACRO (UNI)**
- **MACRO (BI)**
- **G LFO1 (UNI)**
- **G LFO1 (BI)**
- **G LFO2 (UNI)**
- **G LFO2 (BI)**

- **G EG 1**
- **G EG 2**
- **G RAND TRIG 1 (UNI)**
- **G RAND TRIG 1 (BI)**
- **G RAND TRIG 2 (UNI)**
- **G RAND TRIG 2 (BI)**
- **MOD WHEEL (UNI)**
- **MOD WHEEL (BI)**
- **EXPRESSION PEDAL**
- **SUSTAIN PEDAL**
- **CV IN 1**
- **CV IN 2**
- **OFFSET (range is 2 octaves)**

DESTINATION
Selects the destination for the modulation routing. You may select a destination by either scrolling through them with the **VALUE** encoder or pressing down on the **SELECT** with the destination section highlighted (will begin blinking) and moving the control of the desired destination. Setting a positive amount will increase the direct modulation amount (post **FUNCTION**) from the source to the destination, while a negative amount will invert the modulation.

Note that this destination amount is summed with the amount of modulation routed through the controller and the sum of the two values cannot exceed 100 or go below -100. If the direct modulation amount is set to 10%, then the most modulation that can be routed through a Controller is 90%.

Available modulation destinations are:

- **LFO 1 RATE**
- **LFO 1 AMP**
- **LFO 2 RATE**
- **LFO 2 AMP**
- **PITCH LFO RATE**
- **PITCH LFO SHAPE**
- **PITCH LFO AMT**
- **KEYBOARD** (control signal coming from the keyboard – thereby affecting all OSCILLATORS)
- **OSC 1 FREQ**
- **OSC 1 TRI/SAW SHAPE**
- **OSC 1 PULSE WIDTH**
- **OSC 1 WAVE MIX**
- **OSC 2 FREQ**
- **OSC 2 TRI/SAW SHAPE**
- **OSC 2 PULSE WIDTH**
- **OSC 2 WAVE MIX**
- **OSC FM AMT**
- **MOD OSC FREQ**
- **MOD OSC VCO AMT**
- **MOD OSC PWM AMT**
- **MOD OSC VCF AMT**
- **MOD OSC VCA AMT**
- **DETUNE**
- **GLIDE**
- **MIX OSC 1**
- **MIX OSC 2**
- **MIX RING MOD**
- **MIX MOD OSC**

MUSE MODULES *(Cont.)*

- **MIX NOISE**
- **MIX OVERLOAD**
- **VCF 1 CUTOFF**
- **VCF 1 RES**
- **VCF 1 EG AMT**
- **VCF 2 CUTOFF**
- **VCF 2 RES**
- **VCF 2 EG AMT**
- **LINKED CUTOFF** (controls the cutoffs of both filters at once)
- **VCF EG ATTACK**
- **VCF EG DECAY**
- **VCF EG SUSTAIN**
- **VCF EG RELEASE**
- **VCA EG ATTACK**
- **VCA EG DECAY**
- **VCA EG SUSTAIN**
- **VCA EG RELEASE**
- **VCA LEVEL**
- **VCA PAN**
- **VCA PAN SPREAD**
- **CV OUT 1**
- **CV OUT 2**
- **G LFO1 RATE**
- **G LFO1 AMP**
- **G LFO2 RATE**
- **G LFO2 AMP**
- **G EG1 ATTACK**
- **G EG1 DECAY**
- **G EG1 SUSTAIN**
- **G EG1 RELEASE**
- **G EG2 ATTACK**
- **G EG2 DECAY**
- **G EG2 SUSTAIN**
- **G EG2 RELEASE**
- **DELAY TIME L**
- **DELAY TIME R**
- **DELAY TIME LINKED**
- **DELAY FEEDBACK**
- **DIFFUSION AMOUNT**
- **DIFFUSION MOD AMOUNT**
- **DIFFUSION TIME**
- **DELAY CUTOFF**
- **MULTI-TAP**
- **DELAY MIX**
- **DELAY SEND**

COPYING MOD SLOT

You can copy a modulation routing from one slot to another by selecting the mod slot you wish to copy using the location buttons 1-16 and then pressing COPY. The current mod slot will begin blinking and you may then select any other mod slot as the copy destination (remember that currently empty slots will be unlit while currently used slots will be dimly lit). Select a destination and then press ENTER to confirm the copy procedure.

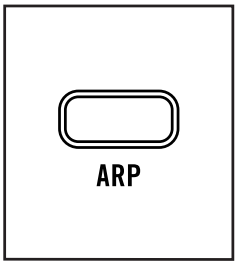
DELETING MOD SLOT

You can delete a modulation routing by selecting the mod slot you wish to delete using the location buttons 1-16 and then pressing INIT.

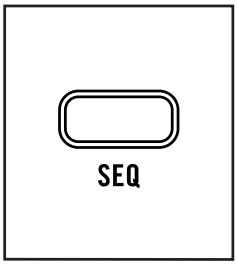
MUSE MODULES *(Cont.)*

ARP/SEQ/STEP

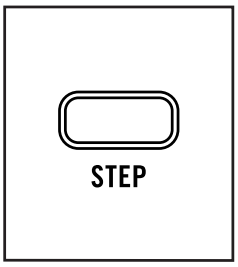
The **ARP, SEQ,** and **STEP** buttons are used for navigation and configuration of the **ARPEGGIATOR** (**ARP**) and **SEQUENCER** (**SEQ/STEP**). For more information, see their respective sections above.



ARP
Puts the **PROGRAMMER** in **ARP** mode, allowing you to configure the **ARPEGGIATOR**. See the **ARPEGGIATOR** section above for more details.



SEQ
Puts the **PROGRAMMER** in **SEQ** mode, allowing you to select between 16 sequences using the location buttons (1-16). Pressing the **SEQ BANK** soft button allows you to select a sequence bank – Muse contains 16 banks of 16 sequences each. Each sequence (and sequence bank) can be named by the user for categorization purposes. See the **SEQUENCER** section above for more details.

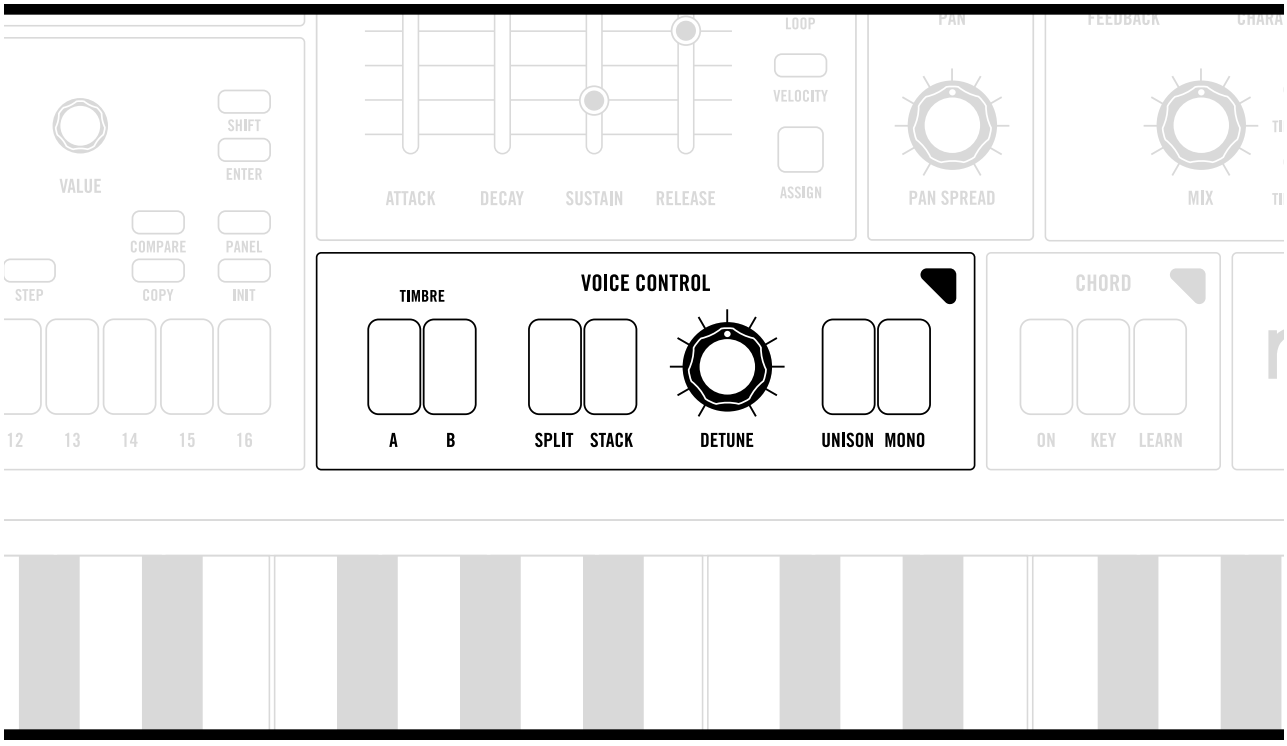


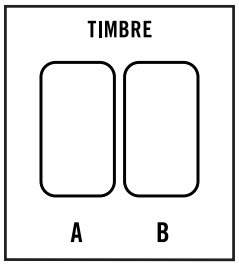
STEP
Puts the **PROGRAMMER** in **STEP** mode, allowing you to select between 64 steps in the current sequence using the location buttons (1-16) and the **PAGE** button in the **SEQUENCER**. See the **SEQUENCER** section above for more details.

MUSE MODULES *(Cont.)*

VOICE CONTROL

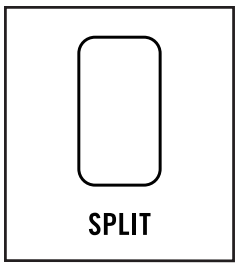
The **VOICE CONTROL** section allows you to control different aspects of voice allocation among Muse's eight voices. It allows you to select which **TIMBRE** is being edited via the main panel controls, whether a **TIMBRE** is operating in **MONO** or **UNISON** modes, the amount of detuning across voices, and timbre **STACK/SPLIT** behavior.





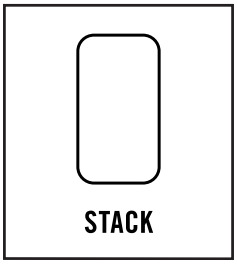
TIMBRE A/B
Selects either **TIMBRE A** or **B** for editing via the main panel controls. The button corresponding to the currently active timbre being edited will be illuminated.

NOTE: *Pressing both* ***TIMBRE A*** *and* ***TIMBRE B*** *at the same time will allow you to adjust settings for both timbres at once.*

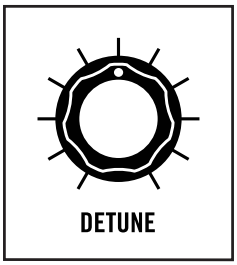


SPLIT
Splits the keyboard, allowing you to control **TIMBRE A** and **TIMBRE B** from two different zones on the keyboard. Keyboard split point can be edited via the **VOICE CONTROL MORE** page.

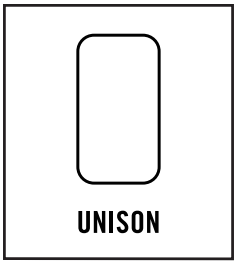
MUSE MODULES *(Cont.)*



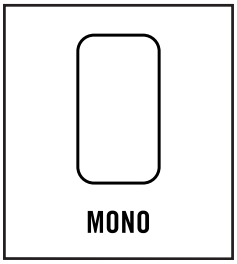
STACK
Allows you to control both **TIMBRE A** and **TIMBRE B** from the keyboard at the same time with both playing simultaneously. Engaging **STACK** also reduces available polyphony by half (or more) depending on the **UNISON** settings of either **TIMBRE**.



DETUNE
When used polyphonically, **DETUNE** adds subtle pitch offsets to each voice, imitating the behavior of an old synthesizer that has slipped from perfect calibration over years of use. When **UNISON** mode is engaged, **DETUNE** creates tuning offsets between the stacked voices used. When **MONO** mode is engaged, **DETUNE** subtly differentiates the tracking behavior between the two oscillators of the single mono voice.



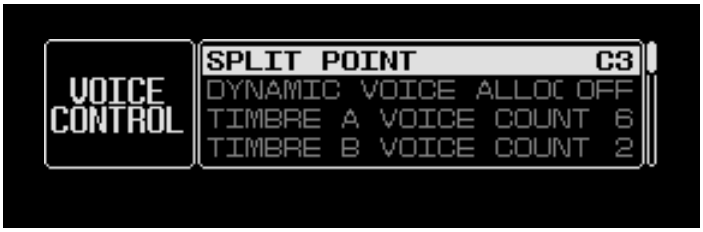
UNISON
Enables unison mode on the currently selected timbre, which will stack any currently unused voices on top of the active ones.



MONO
Enables mono mode on the currently selected timbre, which will restrict the timbre to operating in a monophonic mode. Only one voice will be used at a time and polyphonic playing will be disabled.

MUSE MODULES *(Cont.)*

VOICE CONTROL MORE MENU



SPLIT POINT
Adjusts the note on the keyboard where the **SPLIT** point occurs when **SPLIT** mode is engaged. If using a **SPLIT, TIMBRE A** will always be to the left of the split point and **TIMBRE B** to the right. Use **SWAP TIMBRE SETTINGS** to swap **TIMBRES A** and B if you wish to change their orientation around the split point.

DYNAMIC VOICE ALLOCATION (OFF, ON. *DEFAULT: OFF)*
Enables dynamic voice allocation, allowing a **TIMBRE** to steal voices from the other **TIMBRE** if its voice count is exceeded. If **TIMBRE A** is restricted to 5 notes and is playing a 5 note chord, that leaves 3 voices to **TIMBRE B**. With **DYNAMIC ALLOCATION** enabled, when **TIMBRE B** plays more than 3 voices it will begin to steal them from **TIMBRE A**. With **DYNAMIC ALLOCATION** disabled, a timbre cannot steal voices from the other timbre.

TIMBRE A VOICE COUNT
Restricts a certain number of voices to **TIMBRE A** so that **TIMBRE B** cannot steal voices from **TIMBRE A**.

TIMBRE B VOICE COUNT
Restricts a certain number of voices to **TIMBRE B** so that **TIMBRE A** cannot steal voices from **TIMBRE B**.

***NOTE:** The Voice Count settings for **TIMBRE A** and **B** will move with respect to each other and always sum to eight to avoid voice stealing conflicts. If 6 voices are allocated for **TIMBRE A** then 2 will be allocated for **TIMBRE B**, etc.*

SWAP TIMBRE SETTINGS
Swaps **TIMBRES A** and **B**.

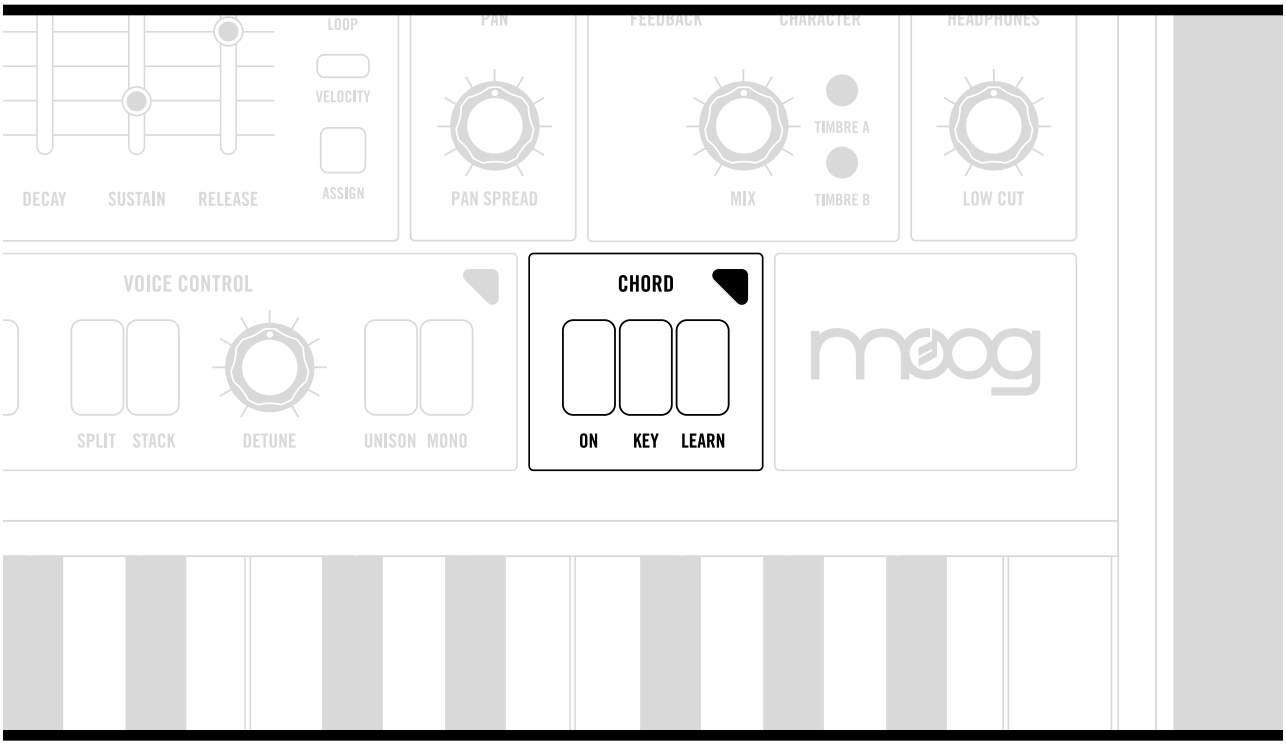
MUSE MODULES *(Cont.)*

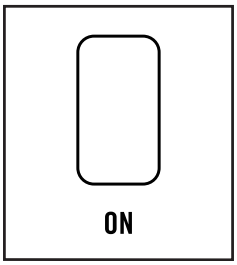
CHORD

The **CHORD** section controls the chord memory functionality on Muse. Chord memory allows you to store a chord shape in memory and play that chord back from a single key. You can move the chord around on the keyboard using any key played as the lowest note in the stored **CHORD** shape.

Alternatively, **KEY** mode allows you to store a completely different chord shape for every key on the keyboard. Combining **KEY** mode with the arpeggiator can allow you to integrate chords of up to eight notes into your arpeggiated patterns!

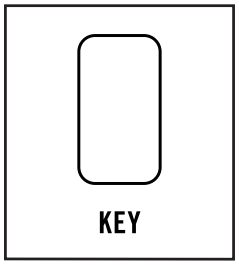
You may also use **KEY** mode to store only a single note – effectively remapping the keyboard to your needs. Change C major to a C minor by using **KEY** mode to store the minor scale notes in place of the major scale notes and use the chord mode **ON** button to toggle between keys. This can also be a very handy performance feature, allowing you to load the right notes for basslines for easy playback on stage.



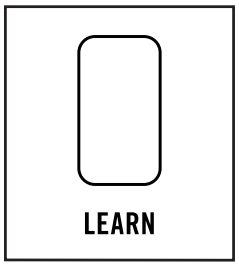


ON
Engages chord memory. If the **KEY** button is off, the last learned chord will be used.

MUSE MODULES *(Cont.)*

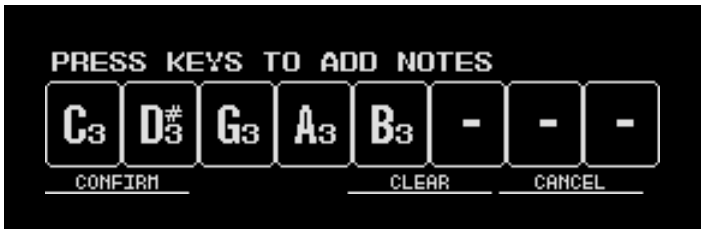


KEY
Engages **KEY** mode, in which each key of the keyboard contains its own chord.

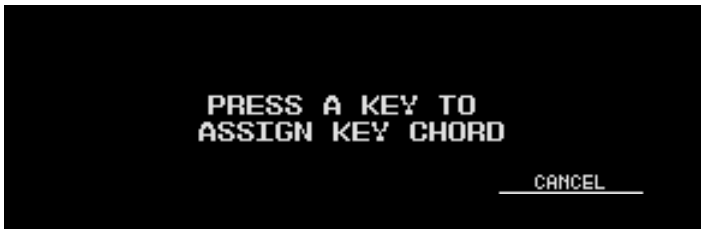


LEARN
Enters chord storage mode, which operates differently based on which chord memory mode is being used:

CHORD MEMORY (KEY OFF)
Press **LEARN** and the **PROGRAMMER** will bring up the chord memory input view.Add up to eight notes to your chord by pressing keys on the keyboard and press the **CLEAR** soft button to start over if you need to. Press the **CONFIRM** soft button to confirm the stored chord shape.



KEY MODE (KEY ON)
Press **LEARN** and the **PROGRAMMER** will bring up the chord memory input view. Add up to eight notes to your chord by pressing keys on the keyboard. Once you press **CONFIRM** you will be prompted to press a key to store as a location for your chord. Pressing a key will store the chord. You may press **LEARN** again to continue storing chords to different key ocations. Every key of the keyboard may contain a different chord in **KEY** mode.



NOTE: *When in **KEY** mode, any keys that do not have chords stored to them will simply play a single note as usual.*

CHORD MORE MENU

KEY MAP
Selects key map 1 through 8, allowing for storing up to 8 key maps for **KEY MODE** into memory.

CLEAR CURRENT KEY MAP
Clears out the currently selected **KEY MAP**.

SETTINGS

GLOBAL SETTINGS

Press the **MENU** button in the **PROGRAMMER** to open the global settings page.

SHOW PARAM CHANGES (ON/OFF. *DEFAULT: ON)*
Displays panel changes as controls are moved when enabled – showing the current value as well as the saved value of the current timbre/ patch.

PARAM CHANGE TIME (1.00-5.00 Seconds. *DEFAULT: 2.00 Seconds)*
Configures display time for popup parameter change display.

KNOB MODE (ABSOLUTE, RELATIVE, PASS THRU. DEFAULT: ABSOLUTE)
Selects a mode for how knobs update parameter values loaded from a patch.

ABSOLUTE
Turning a panel control immediately changes the parameter to the value represented by the control.

RELATIVE
Turning a panel control gradually changes the parameter until the control catches up with the saved value.

PASS THRU
Turning a panel control will do nothing until it reaches the saved value, at which point the panel control becomes active.

VERSION
Displays the current firmware version.

PANEL VERSION
Displays the current panel firmware version.

SE BUILD
Displays the sound engine version.

FPGA BUILD
Displays the specific FPGA version.

FIRMWARE UPDATE
Update the firmware of Muse via a USB flash drive inserted into the USB-A port on the rear of Muse. See FIRMWARE UPDATES AND LIBRARY MANAGEMENT section below.

RESET GLOBAL SETTINGS TO DEFAULT
Resets all global settings to default values - press ENTER to execute.

SETTINGS *(Cont.)*

MIDI

Press the **MIDI** button in the **PROGRAMMER** to open the **MIDI** settings page.

(SOFT BUTTON) MIDI Panic
Sends Note Off messages to all voices, **SEQ**, and **ARP**. Sends All Notes Off message to **KEYBOARD MIDI OUT CHANNEL** via **USB/DIN** and All Controllers Off message to **KEYBOARD MIDI OUT CHANNEL** and **LHC MIDI OUT CHANNEL** via **USB/DIN**.

KEYBOARD MIDI OUT CHANNEL
(ALL, 1-16. *DEFAULT: 1)*
Selects a **MIDI** channel for output of Muse's keyboard information: MIDI NOTE, NOTE ON/OFF, VELOCITY, AFTERTOUCH, and MIDI CCs messages.

LHC MIDI OUT CHANNEL (ALL, 1-16. *DEFAULT: 1)*
Selects a **MIDI** channel for output of Muse's Left-Hand Controller (**LHC**) information: **PITCH WHEEL** and **MOD WHEEL.**

MULTI MODE (OFF/ON. *DEFAULT: ON)*
Engages **MULTI MODE**, allowing Muse's two timbres to be controlled independently via external **MIDI** control. If **ON**, messages at **MIDI CHANNEL IN** will control **TIMBRE A** of Muse while **TIMBRE B** will be independently controlled via messages at **MULTI IN B CHANNEL**. If **OFF**, Muse will handle incoming **MIDI** messages as if the local keyboard were being used.

***NOTE:** In **MULTI MODE** the **STACK** and **SPLIT** buttons in **VOICE CONTROL** are ignored – **STACKS**, however, can still be achieved by sending duplicate **MIDI** messages to both **MIDI** channels.*

MIDI IN CHANNEL (OMNI, 1-16. *DEFAULT: 1)*
Selects a MIDI channel for receiving MIDI information. Will be used to control only **TIMBRE A** if **MULTI MODE** is engaged.

MULTI IN B CHANNEL (OMNI, 1-16. *DEFAULT: 1)*
Selects a **MIDI** channel for receiving **MIDI** information for **TIMBRE B** when **MULTI MODE** is engaged.

SEQ PGM CHNG CHANNEL (1-16. DEFAULT: 16)
Muse can use a separate MIDI channel for program change messages to change sequences independantly of patches. Program change messages are formatted the same way as program change for patches: MSB is 0, LSB is 1-16 (selects SEQ BANK), PC 1-16.

LOCAL KEYBOARD (ON/OFF. *DEFAULT: ON)*
Turns on/off local keyboard control of Muse – allowing you to decouple the keyboard from the internal Muse sound engine.

LOCAL LHC (ON/OFF. *DEFAULT: ON)*
Turns on/off local Left-Hand Controller (**LHC**) control of Muse – allowing you to decouple the **LHC** from the internal Muse sound engine.

SETTINGS *(Cont.)*

SEND CC (ON/OFF. *DEFAULT: ON)*
Sets whether Muse sends CC messages via the **MIDI OUT** and **USB** outputs.

RECIEVE CC (ON/OFF. *DEFAULT: OFF)*
Sets whether Muse receives CC messages via the **MIDI IN** and **USB** inputs.

SEND PGM CHNG (ON, OFF. DEFAULT: ON)
Enables or disables sending of MIDI program change messages.

RECIEVE PGM CHNG (ON, OFF. DEFAULT: OFF)
Enables or disables reciept of MIDI program change messages to change patches. Messages are formatted as follows: MSB is 0, LSB is 1-16 (selecting a BANK), PC is 1-16 (selecting a PATCH within that BANK).

MIDI MONITOR
Turns on the **MIDI MONITOR**, allowing you to view basic incoming and outgoing **MIDI** messages.

CV

Press the **CV** button in the **PROGRAMMER** to open the Control Voltage settings page.

CV inputs and outputs are programmed via the **MOD MAP. CV IN 1** and **CV IN 2** can be selected as modulation sources or controllers, while **CV OUT 1** and **CV OUT 2** can be selected as modulation destinations.

SUSTAIN IN POLARITY (CLOSED/OPEN/CV. *DEFAULT: CLOSED)*
Configures behavior at **SUSTAIN** input on rear panel of Muse.

SETTINGS *(Cont.)*

TUNING

QUICK TUNE touches up the tuning for the current temperature conditions and takes a few seconds. Tuning measurements taken for quick tune are saved, and Muse will remember environmental conditions to stay in tune in the future. Therefore, the more environments in which you run **QUICK TUNE**, the more robust your instrument's tuning will be.

Press the **TUNING** button in the **PROGRAMMER** to open the **TUNING** configuration page.

START QUICK TUNE
Begins quick tuning routine, which touches up the tuning for the current temperature conditions and takes a few seconds.

EXPORT LOG
Useful for diagnostical purposes. Connect a USB drive and click **EXPORT LOG** to write tuning and calibration log files.

GLOBAL TUNE (400.00 Hz - 480.00 Hz. DEFAULT: 440.00 Hz)
Global tuning offset applies to OSC 1, OSC 2, MOD OSC, and FILTER cutoff frequencies.

VOICE TEMP
Displays the current temperature of the voice cards in degrees centigrade.

The instrument is calibrated & tuned at the factory in a controlled environment, so do not run full **TUNING** or **AUTOCAL** unless there is a significant problem that cannot be solved by other means.

However, if you *must* run **TUNING/AUTOCAL**, there are some guidelines to follow to get a good result.

1. Turn off the instrument and let it cool down to the ambient temperature of the room. This can take up to several hours of the instrument being off.

2. Turn on the instrument and run **TUNE AND CAL**. The instrument will then take measurements as it warms up and will wait for the temperature to stabilize before continuing. During this time, the instrument will not appear to be doing anything - rest assured, it is, so leave it be.

3. The full **TUNE AND CAL** procedure can occasionally take upwards of 1-2 hours. So be patient and do not touch the instrument during the procedure.

Full **TUNE AND CAL** should be run in a moderate and temperature stable environment, such as a house at ~70 degrees F or ~21 degrees C. If the environment is exceedingly warm or cold (or the temperature is fluctuating) the procedures may fail or produce poor results.

TUNING/AUTOCAL proceedures are unlocked by holding the outer soft buttons while in the **TUNING** menu.

START TUNING
Begins full **TUNING** routine, which fully tunes all 24 VCOs of Muse across it's musical range. Instrument must be cooled down to room temperature, so turn Muse off for at least an hour before beginning **TUNING**. Turn Muse on and run **TUNING** and the instrument will warm up gradually as it performs the TUNING operation. Set aside 1-2 hours in total for **TUNING** and let Muse warm up at its own pace, ensuring no fans are blowing on Muse or anything else that would introduce temperature fluctuations.

NOTE: TUNING *removes all* ***QUICK TUNE*** *data and as such should not be run unless there are significant tuning issues since measurements saved by running* ***QUICK TUNE*** *improve your instrument's tuning and performance.*

SETTINGS *(Cont.)*

START AUTOCAL
Begins full **AUTOCAL** routine, which calibrates the analog synthesizer circuits of Muse. Instrument must be cooled down to room temperature, so turn Muse off for at least an hour before beginning **AUTOCAL**. Turn Muse on and run **AUTOCAL** and the instrument will warm up gradually as it performs the **AUTOCAL** operation. Set aside 1-2 hours in total for **AUTOCAL**.

START TUNE AND CAL
Runs both full **TUNING** and **AUTOCAL** routine. Instrument must be cooled down to room temperature, so turn Muse off for at least an hour before beginning **TUNE AND CAL**. Turn Muse on and run **TUNE AND CAL** and the instrument will warm up gradually as it performs the operation. Set aside 1-2 hours in total for **TUNE AND CAL**.

FIRMWARE UPDATES AND LIBRARY MANAGEMENT

Muse is a living instrument, and as such its firmware will be updated periodically to provide new features and system improvements. Firmware updates can be accomplished one of two ways: either via a flash drive inserted into the USB-A port (**FLASH DRIVE**) or connecting to a computer to Muse via the USB-B port (**DISK MODE**).

FLASH DRIVE

NOTE: *Firmware update via flash drive is only available to units on firmware v.1.3.0 or later.*

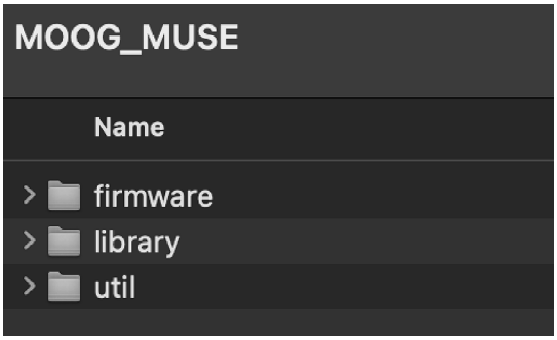
To update Muse via a USB flash drive, move the updated firmware file (named "moog-muse-firmware.bin") into the root directory of your flash drive. The file MUST be in the root directory of the drive or else Muse will not find it. The drive must be FAT32 formatted to be recognized by Muse.

Insert the drive into the **USB-A (HOST)** port on the rear panel of Muse. Press **MENU** in the **PROGRAMMER** and scroll down to and select **FIRMWARE UPDATE**. Muse will first check for a firmware file in the connected flash drive and if found will proceed with the update. Once the update has completed you may power cycle your Muse.

FIRMWARE UPDATES AND LIBRARY MANAGEMENT *(Cont.)*

DISK MODE

To update Muse using a computer, you can connect your computer to Muse via the USB-B port on the rear panel of Muse and enter DISK MODE. DISK MODE allows you to not only update the firmware of Muse but also enables library management of patches and sequences.

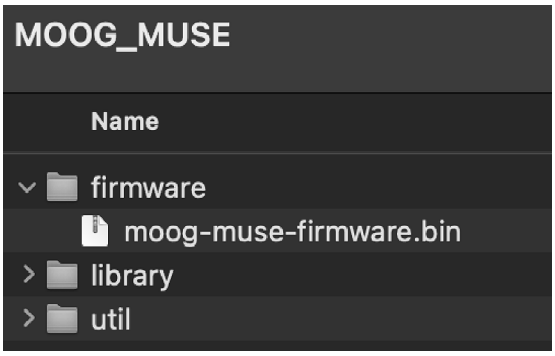


To enter **DISK MODE**:

- Power off Muse.
- Connect your computer to the **USB-B** port on the rear of Muse.
- Hold down the **SELECT** encoder on Muse and continue holding it down while powering on Muse. You may release the **SELECT** encoder once the **PROGRAMMER** screen reads **DISK MODE**.

!!! NOTE: *Windows users may see a prompt that says "There is a problem with this drive, scan the drive now to fix it." Do not scan the drive as this may cause issues with your unit and will likely result in having to send it back for service. Either exit out of the pop-up prompt or wait a few moments and it will go away on its own.*

- Muse will now appear on your computer as an external disk named MOOG_MUSE.



Once in disk mode, you may open the **MOOG_MUSE** disk to view its contents.

- *firmware* contains the firmware binary file
- *library* contains data for all patches and all sequences
- *util* contains calibration data and should be ignored

FIRMWARE UPDATES AND LIBRARY MANAGEMENT *(Cont.)*

To make firmware updates, drag the updated firmware file (named “moog-muse-firmware.bin”) into the firmware folder, replacing the old file. The firmware folder MUST contain ONLY a valid “moog-muse-firmware.bin” file and nothing else for Muse to function properly.

Once the firmware file has been updated:

- Eject the MOOG_MUSE drive from your computer.

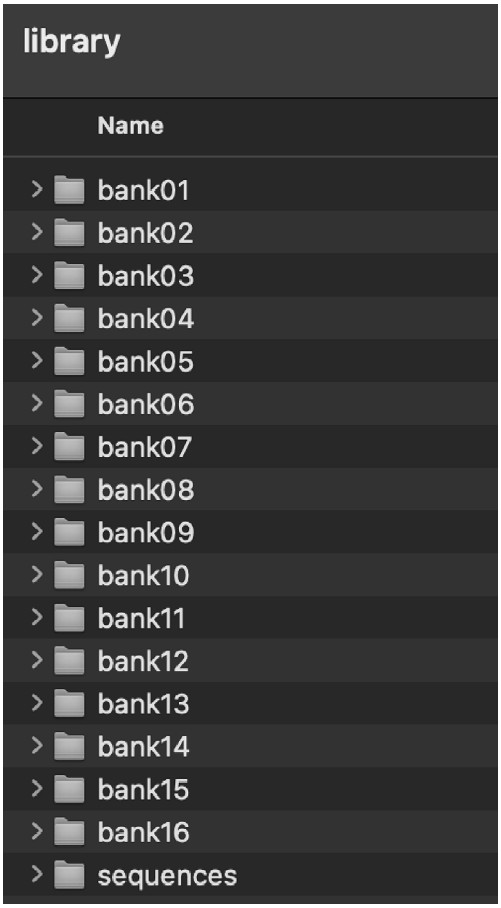
IMPORTANT: *Safely ejecting Muse is critical to ensure all pending operations are completed and that the firmware is fully updated.*

- The **PROGRAMMER** screen will now read **DISK MODE SESSION ENDED**.

You’re done! You may now power off Muse, disconnect it from the computer, and power it on as normal to begin using the new firmware.

The library folder contains a folder for every patch bank of Muse. Within each bank folder is a separate folder for each patch - inside of which is the patch data for that bank and patch location. Only one patch can be in a patch folder at a time. Inside the sequences folder is a similar file structure for the banks and sequences in the **SEQUENCER**.

You may move around patches/sequences, rename them, back them up on your computer, and transfer new patches from your computer to Muse using **DISK MODE**, but you must retain the file structure in the library folder.



SPECIFICATIONS

SYNTHESIZER TYPE
Polyphonic, Bi-timbral Analog Synthesizer

SOUND ENGINE
Analog

POLYPHONY
8 Voices

KEYBED
61 full-size semi-weighted Fatar keybed with Velocity and channel Aftertouch

CONTROLLERS
Pitch Wheel, Modulation Wheel, Macro Knob, Keyboard Octave switch, Hold switch, Sustain Pedal input, Expression Pedal input – all pedal functions are assignable

PANEL CONTROLS
44 knobs, 16 sliders, 129 buttons – OLED screen

ANALOG VOLTAGE-CONTROLLED OSCILLATORS
(x2) Selectable Triangle/Sawtooth mix, variable width Pulse wave, Octave (16', 8', 4', 2'), Frequency (+/- 7 Semitones), Wave Mix (blends Triangle/Sawtooth with variable Pulse wave), FM routing and amount, Hard sync

ANALOG RING MODULATOR
Ring modulation between Oscillators 1 and 2

ANALOG VOLTAGE-CONTROLLED MODULATION OSCILLATOR
Selectable waveform (Sine, Sawtooth, Reverse Sawtooth, Square, Noise), Audio range toggle switch, Keyboard tracking, Keyboard reset, Unipolar switch, Pitch Modulation routing and amount, Filter Modulation routing and amount, Pulse Width Modulation routing and amount, VCA Modulation amount, Panning switch

ANALOG NOISE GENERATOR
White noise

ANALOG VOLTAGE-CONTROLLED MIXER
Independant level control for OSC 1, OSC 2, RING, MOD OSC, and NOISE. Overall OVERLOAD control

ANALOG VOLTAGE-CONTROLLED FILTERS
(x2) Moog transistor ladder filters (1 with highpass/lowpass modes), Cutoff Frequency, Resonance, KB Tracking Amount, Envelope Amount, Linked Operation, Routing (Series, Parallel, Stereo)

ENVELOPES
(x2) Attack, Decay, Sustain, Release, variable curves per stage, Multi-trig, Loop, Velocity

ANALOG VOLTAGE-CONTROLLED AMPLIFIER
Volume per Timbre, Pan position per Timbre, Pan Spread per timbre

DIFFUSION DELAY™
Configurable stereo signal processor, Delay Time Left, Delay Time Right, Feedback, Character, Mix, analog bypass switches (to maintain 100% analog signal path)

SPECIFICATIONS *(Cont.)*

OUTPUT SECTION
Master Volume, Headphones Volume, Low Cut EQ

LFO
(x2) Rate, Amplitude, Waveform selection (Triangle, Sawtooth, Square, Sample-and-Hold, User customizable), Keyboard Reset

PITCH LFO
Rate, Ramp Down through Triangle to Ramp Up Shape control, One-Shot Envelope toggle, Keyboard Reset, Pitch Modulation routing and amount

GLIDE
Selectable glide type (LCR, LCT, EXP), Glide amount

CLOCK
Clock rate, Tap Tempo

ARPEGGIATOR
Per-timbre with Clock Division, Octave range, Pattern, Direction, Gate time, Rhythmic programming, etc.

SEQUENCER
64 step sequencer with Clock Division, Transport controls, Sequence chaining, Step editing, Modulation capabilities, and memory capacity of 16 banks of 16 sequences

PROGRAMMER
Browser via OLED screen with 16 banks of 16 patches, Mod Map, Arpeggiator settings, Sequencer with per-step settings, Global settings, etc.

VOICE CONTROL
Mono or poly voice count per timbre, Unison/Mono, Detune, Timbre editing, Voice stealing configuration

CHORD MEMORY
Chord memory with per-key functionality

MOD MAP
16 modulation slots per timbre per patch with controllers and mathematical transform functions

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REAR PANEL

AUDIO OUTPUTS
Main Left, Main Right (1/4" TRS)

HEADPHONES
Stereo 1/4" (located on the front edge of the Left Hand Controller)

PEDAL INPUTS
Sustain, Expression (1/4" TRS; Configurable through Mod Map or for use as 1/4" TS CV inputs)

CONTROL VOLTAGE INPUTS
CV IN 1, CV IN 2 (1/8" TS)

CONTROL VOLTAGE OUTPUTS
CV OUT 1, CV OUT 2 (1/8" TS)

SPECIFICATIONS *(Cont.)*

ANALOG CLOCK INPUT
CLOCK IN (1/8” TS)

ANALOG CLOCK OUTPUT
CLOCK OUT (1/8” TS)

MIDI
5 Pin DIN MIDI IN, OUT, THRU; MIDI over USB

USB B
USB-B connector for interfacing with a computer or other host MIDI device

USB A (HOST)
USB-A connector for connecting to other instruments with Muse as the MIDI host

POWER

STYLE
IEC Cable

INPUT
100 – 240VAC; 50 Hz – 60 Hz

WEIGHT

14.55 (kg), 32 (lbs)

DIMENSIONS

(W x D x H): 99 x 42 x 11 (cm), 39 x 17 x 4.5 (inches

SERVICE & SUPPORT

MOOG'S STANDARD WARRANTY

Moog warrants its products to be free of defects in materials or workmanship and conforming to specifications at the time of shipment. The Warranty Period is one year from the date of purchase. If, in Moog's determination, it has been over five years since the product shipped from our factory, it will be at Moog's discretion whether to honor the warranty regardless of the purchase date. During the Warranty Period, any defective products will be repaired or replaced, at Moog's option, on a return-to-factory basis. This warranty covers defects that Moog determines are not the fault of the user.

The Moog Limited Warranty applies to USA purchasers only. Outside the USA the warranty policy and associated service is determined by the laws of the country of purchase and supported by our local authorized distributor.

A listing of our authorized distributors is available at *www.moogmusic.com.*

If you purchase outside of your country, you can expect to be charged for warranty as well as non-warranty service by the service center in your country.

RETURNING YOUR PRODUCT TO MOOG MUSIC

You must obtain prior approval in the form of an RMA (Return Material Authorization) number from Moog before returning any product. Email techsupport@moogmusic.com for an RMA number. All products must be packed carefully and shipped with the Moog supplied power adapter. Muse must be returned in the original inner packing including the cardboard inserts. The warranty may not be honored if the product is not properly packed. Once you have received the RMA number and carefully packed your Moog Muse, ship the product to Moog Music with transportation and insurance charges paid, and be sure to include your return shipping address.

WHAT WE WILL DO

Once received, we will examine the product for any obvious signs of user abuse or damage as a result of transport. If the product was abused, was damaged in transit, or is out of warranty, we will contact you with an estimate of the repair cost. If warranty work is performed, Moog will ship and insure your product to your United States address free of charge.

HOW TO INITIATE YOUR WARRANTY

Please initiate your warranty online at www.moogmusic.com/register. If you do not have web access, please call (828) 251-0090 to register your product.

CARING FOR MUSE

Clean Muse with a soft, dry cloth only—do not use solvents or abrasive detergents. Heed the safety warnings at the beginning of the manual. Do not drop the unit.

AN IMPORTANT NOTE ABOUT SAFETY

There are no user serviceable parts in Muse. Refer all servicing to qualified personnel only.

Phone: +1 (828) 251-0090 | Email: info@moogmusic.com | Website: www.moogmusic.com

APPENDIX A: MIDI CC

MIDI CC	MUSE CONTROL	RANGE
1	Mod Wheel	0-127
3	Mute	0-63 off/ 64-127 on
5	Glide Time	0-127
7	Timbre Volume	0-127
8	Low Cut	0-127
9	Pan Spread	0-127
10	Pan	0-127
11	Expression	0-127
12	LFO 1 Rate	0-127
13	LFO 1 Amount	0-127
14	LFO 1 Waveform	0-127 0-24: TRIANGLE 25-49: SAW 50-74: SQUARE 75-99: RANDOM 100-127: USER WAVE
15	LFO 2 Rate	0-127
16	LFO 2 Amount	0-127
17	LFO 2 Waveform	0-127 0-24: TRIANGLE 25-49: SAW 50-74: SQUARE 75-99: RANDOM 100-127: USER WAVE
18	Pitch LFO Rate	0-127
19	Pitch LFO Shape	0-127
20	Pitch LFO Amount	0-127
21	Pitch LFO OSC 1	0-63 off/ 64-127 on
22	Pitch LFO OSC 2	0-63 off/ 64-127 on
23	Pitch LFO Mod Osc	0-63 off/ 64-127 on
24	Pitch LFO Detune	0-63 off/ 64-127 on
25	Modulation Oscillator Frequency	0-127
26	Modulation Oscillator Audio	0-63 off/ 64-127 on
27	Modulation Oscillator KB Track	0-63 off/ 64-127 on
28	Modulation Oscillator Waveform	0-127 0-24: SINE 25-49: SAWTOOTH 50-74: RAMP 5-99: SQUARE 100-127: NOISE
29	Modulation Oscillator KB Reset	0-63 off/ 64-127 on
30	Modulation Oscillator Unipolar	0-63 off/ 64-127 on
31	Modulation Oscillator Pitch Amount	0-127
33	Modulation Oscillator Pitch OSC 1	0-127
34	Modulation Oscillator Pitch OSC 2	0-127
35	Modulation Oscillator PWM Amount	0-127
36	Modulation Oscillator PWM OSC 1	0-127
37	Modulation Oscillator PWM OSC 2	0-127

APPENDIX A: MIDI CC *(Cont.)*

MIDI CC	MUSE CONTROL	RANGE
39	Modulation Oscillator Filter Amount	0-127
40	Modulation Oscillator Filter 1	0-127
41	Modulation Oscillator Filter 2	0-127
42	Modulation Oscillator VCA Amount	0-127
43	Modulation Oscillator VCA PAN	0-127
44	Oscillator 1 Octave	0-127 0-31: 16' 32-63: 8' 64-95: 4' 96-127: 2'
45	Oscillator 1 Frequency	0-127
46	Oscillator 1 Tri/Saw Mix	0-127
47	Oscillator 1 PW	0-127
48	Oscillator 1 Wave Mix	0-127
49	Oscillator 2 Octave	0-127 0-31: 16' 32-63: 8' 64-95: 4' 96-127: 2'
50	Oscillator 2 Frequency	0-127
51	Oscillator 2 Tri/Saw Mix	0-127
52	Oscillator 2 PW	0-127
53	Oscillator 2 Wave Mix	0-127
54	Oscillator 2>1 SYNC	0-63 off/ 64-127 on
55	Oscillator 2>1 FM	0-63 off/ 64-127 on
56	Oscillator 1>2 FM	0-63 off/ 64-127 on
57	FM Amount	0-127
58	Oscillator 1 Level	0-127
59	Oscillator 2 Level	0-127
60	Ring Mod Level	0-127
61	Modulation Oscillator Level	0-127
62	Noise Level	0-127
64	Sustain Pedal	0-63 off/ 64-127 on
65	Clipping Level	0-127
66	Filter 1 High Pass	0-127
67	Filter 1 Cutoff	0-127
68	Filter 1 Resonance	0-127
69	Filter 1 Envelope Amount	0-127
70	Filter 1 KB Tracking	0-127 0-42:OFF 43-84:HALF 85-127:FULL
71	Hold	0-63 off/ 64-127 on
72	Filter 2 Frequency	0-127
73	Filter 2 Resonance	0-127
75	Filter 2 Envelope Amount	0-127

APPENDIX A: MIDI CC *(Cont.)*

MIDI CC	MUSE CONTROL	RANGE
76	Filter 2 KB Tracking	0-127 0-42:OFF 43-84:HALF 85-127:FULL
77	Link Filters	0-63 off/ 64-127 on
78	Filters Order	0-127 0-42:SER 43-84:STR 85-127:PAR
79	Filter Env Attack	0-127
80	Filter Env Decay	0-127
81	Filter Env Sustain	0-127
82	Filter Env Release	0-127
83	Filter Env Loop	0-63 off/ 64-127 on
85	Filter Env Velocity	0-63 off/ 64-127 on
86	VCA Env Attack	0-127
87	VCA Env Decay	0-127
88	VCA Env Sustain	0-127
89	VCA Env Release	0-127
90	VCA Env Loop	0-63 off/ 64-127 on
91	VCA Env Velocity	0-63 off/ 64-127 on
92	Voice Detune	0-127
93	Delay Time Left	0-127
94	Delay Time Right	0-127
95	Link Delays	0-63 off/ 64-127 on
102	Delay Clock Sync	0-63 off/ 64-127 on
103	Delay Feedback	0-127
104	Delay Character	0-127
105	Delay Mix	0-127
106	Delay Timbre A	0-63 off/ 64-127 on
107	Delay Timbre B	0-63 off/ 64-127 on
108	Voice Unison	0-63 off/ 64-127 on
109	Voice Mono	0-63 off/ 64-127 on
110	Sequencer Clock Div	0-127
111	Arpeggiator Clock Div	0-127
112	Arpeggiator On/Off	0-63 off/ 64-127 on
113	Arpeggiator FW/BK	0-63 off/ 64-127 on
114	Arpeggiator Direction	0-127 0-42:ODR 43-84:PTN 85-127:RND
115	Arpeggiator Octave Range	0-127 0-31:1 32-63:2 64-95:3 96-127:4
116	Clock Tempo	0-127

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