WALRUS AUDIO
MAKO SERIES

M1 HIGH-FIDELITY MODULATION MACHINE
INSTRUCTION MANUAL

The M1 is a powerful multi-function modulation machine with six customized, studio-quality programs: Chorus, Phaser, Tremolo, Vibrato, Rotary, and Filter. Each program has a wealth of options to tune, tweak, customize and then save to one of nine onboard presets (128 with MIDI). A sound explorers delight, the M1 features a dedicated lo-fi knob allowing you to mix various lo-fi parameters to every program. Add subtle movement and texture to float under your playing or make a massive statement with a thick swirling chorus to choppy panning tremolo. Write your sonic story in any style and genre with the M1 High-Fidelity Modulation Machine.

MIDI Thru   MIDI In

9 volt DC, Center Neg. 300mA min*

Output Left (mono)   Input Left (mono)

Output Right   Input Right

Bypass LED   Rate LED

Bypass Switch   Tap Switch

*The use of an isolated power supply is recommended for powering all Walrus Audio Pedals. Daisy chain power supplies are not recommended.

CONTROLS

Rate - The Rate knob sets the speed of the main LFO. Set lower for long gentle movement, and higher for wild and fast modulation.

Depth - The Depth knob determines the amount of modulation heard by setting the amplitude of the main LFO. Go from no modulation at minimum to seasick, mind-bending effects at higher settings.

Tweak - The Tweak knob and switch offer creative control over three different key modulation parameters as well as three "lo-fi" effects. These allow you to creatively shape each modulation program to taste. The lo-fi effects can add character and unique movement to your sound.

Tweak Switch - To adjust the main parameters, simply move the toggle below the knob to select the parameter you want to control, then use the Tweak knob to dial in the preferred Shape, Tap Division, or program Type. To adjust the lo-fi parameters, move the toggle below the knob to select the lo-fi parameter you want to modify and adjust the Tweak knob while holding down the Bypass switch.

Note: If you aren't hearing any effect from the lo-fi parameters, check to make sure the main lo-fi knob is turned up as it serves as the master level knob for all lo-fi parameters.

· **Shape**: Set the switch to Shape and use the Tweak knob to choose sine, triangle, or square LFO wave shapes to modulate your signal.

· **Division (Div)**: Set the switch to the Div position and use the Tweak knob to adjust the tap division used by the M1 to set the LFO speed when tapping a tempo. Choose between quarter, quarter note triplet and eighth note.

· **Type**: Set the switch to the Type position and use the Tweak knob to choose between three different effect types within each program. See the program section for a description of each program type.

Prog (Program) - The Program (shark) knob selects the desired M1 modulation program. Choose between classic chorus sounds, sweeping phaser tones, throbbing tremolos, warm vibrato, throaty rotary speaker, and expressive filters. See the program section for a more detailed description of each.

Tune - Like the Tweak knob, the Tune knob and switch offer creative control over three additional modulation parameters and three "lo-fi" effects. These allow you to further shape each modulation program to taste. The lo-fi effects can add additional character and movement to your sound.
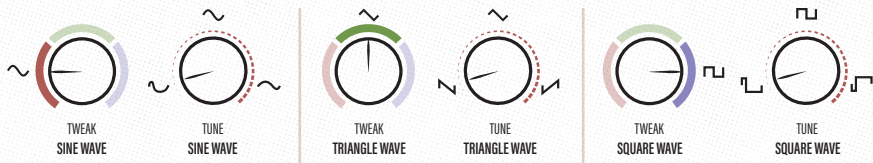
Tune Switch - To adjust the main parameters, simply move the toggle below the knob to select the parameter you want to control, then use the Tune knob to dial in the preferred Tone, Symmetry, or X. To adjust the lo-fi parameters, move the toggle below the knob to select the lo-fi parameter you want to modify and adjust the Tweak knob while holding down the Bypass switch.

Note: If you aren't hearing any effect from the lo-fi parameters, check to make sure the main Lo-Fi knob is turned up as it serves as the master level knob for all lo-fi parameters.

Tune Switch (Continued)

· **Tone**: Set the switch to the Tone position and use the Tune knob to adjust the overall tone of the effect. Set lower for darker, more muted sounds and higher for brighter, full-frequency tones.

· **Symmetry (Sym)**: Set the switch to the Sym position and use the Tune knob to adjust the symmetry of the main LFO shape you have selected on the Tweak knob. Setting the Tune knob at noon will yield traditional LFO shapes corresponding to the selected shape. As you move this control away from noon, the LFO wave shape will asymmetrically deform toward the beginning of the wave below noon and toward the end of the wave above noon. For example, selecting the triangle shape and setting the symmetry knob to minimum would produce a traditional sawtooth wave. See below for other examples of wave shapes at min and max settings with the symmetry knob. Explore the areas in between to create unique, non-traditional LFO waves.

TWEAK	TUNE	TWEAK	TUNE	TWEAK	TUNE
SINE WAVE	SINE WAVE	TRIANGLE WAVE	TRIANGLE WAVE	SQUARE WAVE	SQUARE WAVE

· **X**: The X parameter controls a different effect depending on which program you are using. To edit the X parameter, set the switch to the X position and use the Tune knob to adjust. See the program overview section to learn what the X knob does in each program.

A | B | C Switch - The M1 offers three banks for storing presets. Each bank holds three presets for a total of nine that you can access without using MIDI. The Bank switch selects which bank of presets the pedal will access. Bank A is presets 0-2, Bank B is 3-5, and Bank C is 6-8. The presets in each bank correspond to the Red, Green, and Blue preset LED. The first preset in each bank is Red, the second is Green and the third is Blue.

Bypass/Lo-Fi Switch - Used to turn the pedal on and off and to access the lo-fi parameters.
· Click to turn the pedal on and click again to turn the pedal off.
· When the pedal is on, press and hold while turning the Tweak or Tune to knobs to adjust the desired lo-fi parameters.

Bypass LED - Indicates if the pedal is on or off by illuminating solid when on, and off when the pedal is off.

Tap/Skip Switch - Used to tap the desired LFO rate, which is scaled by the selected tap division. The Tap/Skip switch also allows you to momentarily engage a "skipping" effect like a needle skipping on a record player. Press and hold to engage the effect to automatically repeat the last few milliseconds of audio until the switch is released. The length of audio repeated is determined by the current LFO rate.

Preset LED - The Preset LED lights up the color of the selected preset (red, green, or blue) and indicates the rate of the LFO by blinking at the current rate. When a knob is turned, this LED turns purple to indicate the preset has been modified. When that knob crosses its saved position, the LED changes back to the color of the currently selected preset to let you know its last saved position. This is helpful when you want to tweak a parameter on a preset but cannot remember where a knob was last saved.

Audio Input and Output - The Mako M1 offers multiple input and output configurations.

o Mono In / Mono Out - Use the top set of jacks for mono in - mono out.
o Mono In / Stereo Out
o Stereo In / Stereo Out

LO-FI CONTROLS

Lo-Fi - The Lo-Fi knob allows you to adjust the overall amount, or "mix", of the six lo-fi parameters. Turning this knob up brings in any lo-fi parameters that are engaged while maintaining their relative mix, making it easy to blend in unique combinations of these effects to taste. Setting this knob to minimum turns off all lo-fi parameters no matter their individual levels.

Env: Lo-Fi Envelope allows you to dynamically open the Tone control based on how hard you play. Lower settings will cause a small increase to your Tone knob position and higher settings will cause a bigger jump in the Tone knob position. Hint: This effect will be more apparent when the tone knob is around noon or below.

Drive: Lo-fi Drive offers a crunchy analog-style drive to be added to your signal simulating the warm sound of overdriven analog circuitry.

Space: Lo-fi Space allows you to add some reverb to your modulation chain. Turn to minimum to disengage and turn up to increase mix and decay.

Age: Lo-fi Age engages a complex set of filters used to simulate the limited bandwidth of vintage audio players and recording equipment. There are five predefined filter combinations around the dial. As you turn it up, you go further back in time removing more lows and highs from your signal. From modern, full-frequency at minimum to subtle low-fidelity tones in lower positions and old, thin AM radio sounds in higher positions. Note: as you turn this control up and move back in time, the character of the lo-fi Noise also changes.

Noise: Lo-fi Noise adds analog inspired noise to your signal. The noise character changes depending on what Program and Type are selected. Turn this control up to add tape hiss and vinyl crackle and pop to the selected program.

Warble: Lo-fi Warble manipulates the main LFO wave shape causing it to deform making interesting and less predictable modulation. Set the knob below noon for a more gentle "warping" of the wave and above noon to push the LFO into more of a random shape.

Pressing and holding the Bypass switch opens another layer of unique sound-shaping controls on the M1. Use the Tweak and Tune switches and knobs to gain access to spaced out warbly tones to thinned out, gritty AM radio sounds. Mix in your new findings with the Lo-Fi knob.

PRESETS

The pedal includes 128 total presets slots. Good luck using them all! The first 9 presets are accessible from the pedal using the Bank switch and both stomp switches. All 128 are accessible via MIDI Program Change messages, which are outlined in the MIDI section.

o **To recall a preset:**
1. First, select the bank of presets you want to access with the A|B|C switch. The pedal will automatically recall the first (red) preset in that bank.
2. Next, scroll through the presets in that bank by pressing both stomp switches at the same time. The pedal will load the green preset. Each press of both stomp switches will load the next preset until you get back to red and the pattern repeats inside the selected bank.

o **To save a preset:**
1. Scroll to the preset color in the bank you want to save a new sound.
2. Using the knobs and switches, dial in the desired modulation sound. The Rate LED will turn purple indicating the preset has been modified.
3. To save, hold down the Bypass and Tap switches until the preset LED blinks. The preset is now saved and the LED will return to the preset color.

GLOBAL PREFERENCES

Bypass Mode - The M1 offers two bypass modes. True Bypass and DSP Bypass. In True Bypass mode, the M1 uses relays to completely bypass all pedal circuitry. In DSP Bypass mode, the M1 locks the relays on and uses the DSP to bypass the pedal. The M1 ships in True Bypass mode by default and will remember the selected bypass mode and use that each time it is powered up until you change it.

To change the bypass mode:
1. Hold down the Bypass switch while applying power until the preset LED lights up a solid color - about two seconds.
2. Press the Tap switch to scroll to the color corresponding to the desired bypass mode.
   a. Red: True Bypass
   b. Blue: DSP Bypass
3. Press both stomp switches simultaneously to store the selected bypass mode.

Volume Adjust - The M1 includes the ability to adjust the overall output volume of the pedal to ensure the effects sit right where you want them in the mix. Some modulation effects work well at unity gain while others can benefit from a slight increase in volume to help them stand out. If you experience clipping, try lowering the level with this control.

To adjust the output volume:
1. Hold down the Bypass switch until the Bypass LED begins to flash.
2. Continue holding down the Bypass switch and use the Depth knob to adjust the output level of the pedal. Minimum is 0dB, noon is +2dB, maximum is +4dB.

Factory Reset - To reset the pedal back to factory settings, hold both stomp switches while applying power to the pedal for longer than 10 seconds. After 10 or more seconds, release both stomp switches and the pedal will be reset to factory default settings.

MIDI

The M1 can be controlled via standard MIDI messages. Simply connect your MIDI controller to the M1 MIDI "IN". Downstream MIDI devices can be connected to the MIDI "THRU" which simply lets all incoming MIDI messages pass through to your other devices. The M1 ships with the MIDI channel set to 1 by default.

- o **To Change the MIDI device channel**:
  1. Hold down both stomp switches at power-up until the Red preset led starts flashing, then release both switches.
  2. Now send a MIDI Program Change message on the desired MIDI channel for the pedal.
  3. The pedal will save that MIDI channel and only respond to messages on that channel until the user changes it again.
- o **MIDI In** – Connect upstream MIDI devices or your MIDI controller to the M1 MIDI "IN".
- o **MIDI Thru** – Connect downstream MIDI devices to the M1 MIDI "THRU".
- o **MIDI Clock** - The M1 accepts MIDI clock and sets its modulation time anytime it sees a change in MIDI clock tempo. MIDI clock, when sent, will override the tempo set with the Time knob or Tap switch. You can, however, tap a new tempo after the tempo has been set with MIDI clock. It's a good practice to limit your MIDI clock to only send a few clock pulses at a time since the M1 will quickly lock in the tempo.
- o **MIDI PC** – Presets on the M1 are able to be recalled via MIDI program change messages. To recall a preset, simply send a program change message corresponding to the desired preset to be recalled on the M1 MIDI channel. See the table on the next page for a list of M1 presets and how they map to program change messages.

MIDI

PRESET	MIDI PROGRAM CHANGE (PC)	PRESET	MIDI PROGRAM CHANGE (PC)	PRESET	MIDI PROGRAM CHANGE (PC)
Bank A (Red)	0	Bank B (Red)	3	Bank C (Red)	6
Bank A (Green)	1	Bank B (Green)	4	Bank C (Green)	7
Bank A (Blue)	2	Bank B (Blue)	5	Bank C (Blue)	8
				Accessible via MIDI	9-127

o **MIDI CC** – Most parameters on the M1 can be controlled via MIDI CC messages. The list below shows all applicable MIDI CC numbers and their associated parameters and control values.

PARAMETER	MIDI CC #	MIDI CC Value	PARAMETER	MIDI CC #	MIDI CC Value
Rate	3	0-127	Warble	27	0-127
Depth	9	0-127	Bypass Switch	31	Bypass - 0 Engaged - 127
Lo-Fi	14	0-127	Tap	85	127
Shape	15	0-2	Rotary Speed	86	Slow - 0 Fast - 127
Division	16	0-2	Skip Engage/ Rotary Break	87	Disengaged - 0 Engaged - 127
Type	17	0-2	Output Volume	88	0-127
Prog	18	0-5	MIDI Clock Ignore	89	Disengaged - 0 Engaged - 127
Tone	19	0-127	Tweak Switch	90	0-2
Sym	20	0-127	Bank Switch	102	0-2
X	21	0-127	Tune Switch	103	0-2
Env	22	0-127			
Drive	23	0-127			
Space	24	0-127			
Age	25	0-4			
Noise	26	0-127			

MODULATION PROGRAMS

· **Chorus** - From subtle chorus to vibrant, and lush tri-chorus that will instantly teleport you to the 80s. Type I is a traditional chorus great for tight smooth chorus tones. Type II adds a second chorus with an offset rate and depth. Thanks to the constructive interface, it has a more dramatic character caused by essentially running two chorus pedals in series. Type III finds its roots in the classic tri-chorus effect running three chorus units in parallel for a lush multi-dimensional chorus.

  o **Type 1:** Traditional Chorus
  o **Type 2:** Series Chorus
  o **Type 3:** Tri-Chorus
  o **X:** Lag - Sets the maximum allowed amount of detuning. Set shorter for tight chorus sounds and higher for a more dramatic chorus.

· **Phaser** - Classic 70s phaser sounds we all know and love, with added features that you wouldn't expect. Type I is a 2-Stage Phaser that produces a single notch to the classic mild phaser. Type II is a 4-Stage model producing 2 notches for a stronger effect. Type III is a phaser modeled after the unique tuning and LFO shape found in a Uni-Vibe.

  o **Type 1:** 2-Stage Phaser
  o **Type 2:** 4-Stage Phaser
  o **Type 3:** Univibe Tuned Phaser
  o **X:** Feedback - Determines the amount of phase-shifted signal that is fed back to the effect input. Set lower for a more mild phaser sound and higher for a more aggressive resonate phaser effect.

· **Tremolo** – This program emulates tremolo with three different algorithms containing all the bells, whistles, and even a cherry on top. Type I is excellent for traditional sounds similar to optical and bias tremolos that raise and lower the entire frequency range – similar to the Monument in standard mode. Type II is a warm and cozy harmonic tremolo – similar to the Monument in harmonic mode. This unique sound is formed by raising and lowering your high and low frequencies opposite each other. Type III offers several predefined patterns for rhythmic sequenced pulsing tremolo.

  o **Type 1:** Traditional Tremolo
  o **Type 2:** Harmonic Tremolo
  o **Type 3:** Pattern Tremolo
  o **X:** Stereo Phase - Controls the phase of the right output in relation to the left output. As you turn this control up, the volume modulation on the right channel will become more and more out of phase compared to the left output. Note: this effect is only heard when using both outputs.
  o **Shape (Pattern)** – Pattern Group: Use the Shape knob to select one of three pattern groups. Each group contains five unique patters.
  o **Sym (Pattern)** – Pattern Select: Use the Sym knob to select one of five patterns in the selected group.

· **Vibrato** - Make good parts great with detuned, warbly, and vintage sounds that harken back to the 60s. Type I focuses on traditional vibrato sounds. Old record players inspire a digital take in type II. With classic RPM's on the rate knob and some noise character you'd find in your dad's old dusty Speedwagon LPs. The rate knob can select 33rpm, 45rpm, and 78rpm speeds in this mode. Type III is a modern take on the wow and flutter pitch characters found in old tape players. Warm and charming with a hint of nostalgia.

  o **Type 1:** Traditional Vibrato
  o **Type 2:** Vinyl Vibrato
  o **Type 3:** Tape Vibrato
  o **Rate:** (Vinyl) Record RPM - Selects one of three speeds of a record player to modulate the pitch – 33RPM at min, 45RPM at noon, and 78RPM at max.
  o **X:** (Standard and Vinyl) Stereo Phase - Controls the phase of the right output in relation to the left output. As you turn this control up, the pitch modulation on the right channel will become more and more out of phase compared to the left output.
  o **X:** (Tape) Flutter - Determines the amount of "flutter" applied to your signal. This is a higher frequency warble similar to that found on old tape machines.
  o **Shape:** (Vinyl and Tape) - Control the shape of the sine wave LFO. Sine will be a standard sine wave, but triangle and square will be curvy variations of a sine wave instead of their usual shape. This is to mimic different types of vinyl and tape motor wear.

MODULATION PROGRAMS

- **Rotary** - Because you can't fit a Leslie speaker on your pedalboard. Type I aims for that traditional watery sound of a well-oiled Leslie speaker. Type II only spins the horn but still plays the sound out of the drum. Type III only spins the drum but still plays sound from the horn.

  - o **Type 1:** Horn + Drum (Traditional Rotary Speaker)
  - o **Type 2:** Horn Only
  - o **Type 3:** Drum Only
  - o **X:** Cab Simulation - Controls the mix of a physical rotary cabinet model into your signal.
  - o **Depth:** Horn width - Controls the width of the two spinning horns. Set lower for a closer spacing resulting in a more subtle effect and high for wider spacing and a more dramatic effect.
  - o **Rate:** Fast/Slow Tune - Use this knob to tune the fast and slow speeds of the speaker. When the speaker is running slow, use the knob to tune the slow speed up or down slightly. When it is running fast, use this knob to tune the fast speed up or down slightly.
  - o **Sym:** Distance - Controls the amount of distance between the microphones and the rotary speaker. Also increases the size of the room effect introduced by space.
  - o **Space:** Room - For Rotary only, the Lo-Fi parameter space transforms into a tight room simulation.
  - o **Tap/Skip:** Fast/Slow/Brake - Press to toggle the rotary speaker between its fast and slow speeds. Press and hold to brake.

- **Filter** - Add tone-shaping movement to your signal with different modulated filters. Type I is a lowpass filter good for modulated darker tones. Type II is a highpass filter used to creatively modulate your low frequencies. Type III is a bandpass filter forming a sliding "window" of frequencies. Drive the filter frequency with the main LFO or do things like set the depth to zero and turn up the Lo-Fi envelope control to drive the filter frequency with your playing dynamics.

  - o **Type 1:** Lowpass Filter
  - o **Type 2:** Highpass Filter
  - o **Type 3:** Bandpass Filter
  - o **X:** Filter resonance - Set low for no resonance and turn up for an audible resonate peak at the filter's cutoff frequency.
  - o **Tone:** Center frequency: Use the Tone knob to set the selected filter's center frequency. For example, in Type I LPF, the lower the Tone knob the darker the tone
  - o **Env:** Only on the Filter program is the Envelope effect tied to the filter's center frequency. This allows you to create traditional envelope filter effects if desired. Engage the Envelope to add expressive movement to the filter's cutoff frequency.

UPDATES

Any updates or features added to the M1 will be available via firmware updates at
walrusaudio.io

Scan the code below to be the first to know when any firmware updates are available.

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Got questions or need a repair?
help@walrusaudio.com.

All our pedals come with a limited lifetime warranty.

Visit walrusaudio.com/pages/warranty-and-repair for more info.