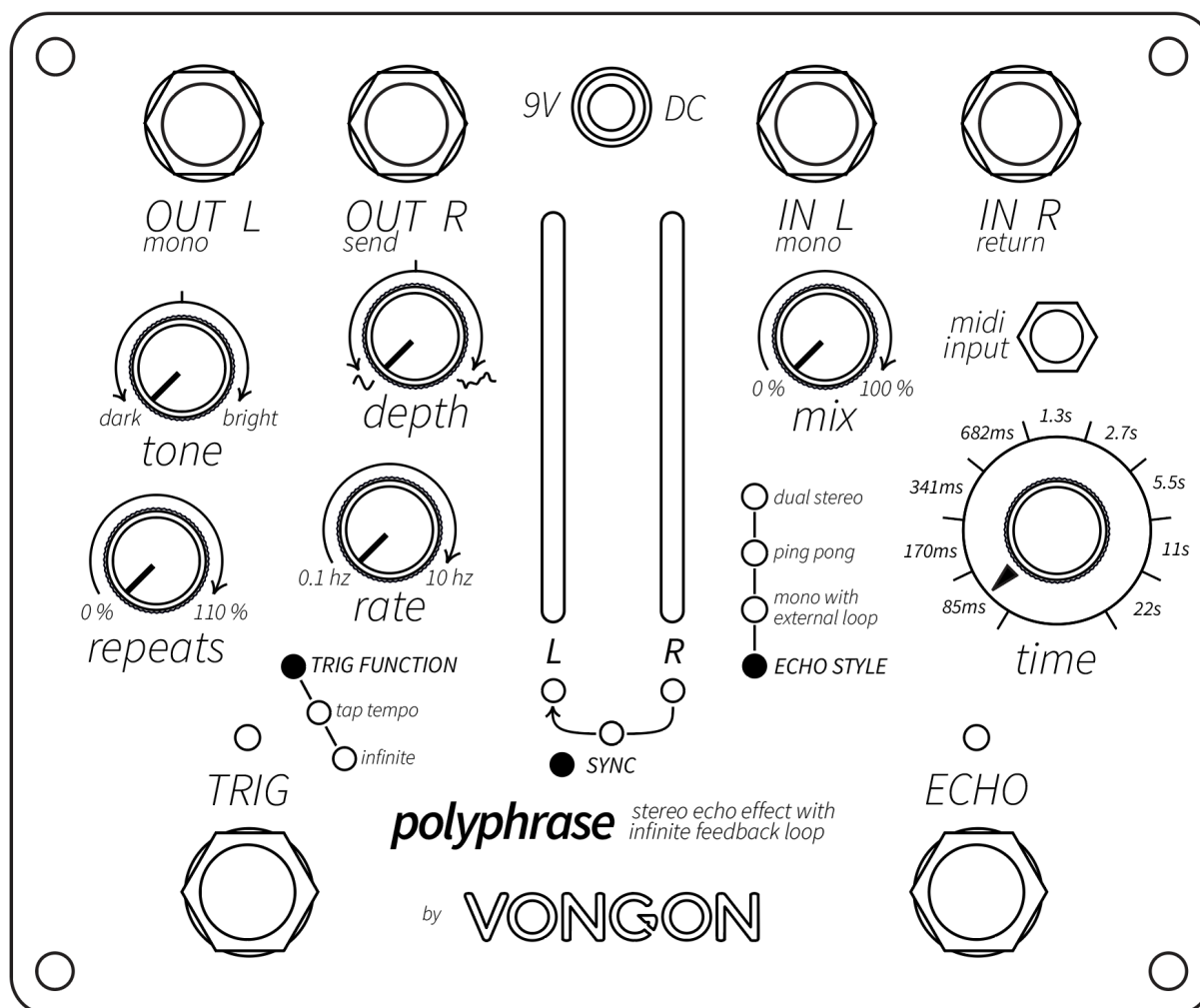


VONGON

polyphrase



USER MANUAL

VERSION 2.3

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Thank you for supporting Vongon! We are a small operation based in Oakland, California. All products are assembled and tested with care and attention in our studio. We catalog audio and video demos of our devices on our website at (www.vongon.com) and instagram ([@vongonelectronics](https://www.instagram.com/vongonelectronics)). Please feel free to reach out to Ryan or Katie with any questions - support@vongon.com

OVERVIEW

POLYPHRASE is a stereo echo and looping device inspired by early proto-digital delays of the 1970's like the Lexicon Prime Time. As sophisticated as it is easy-to-use, Polyphrase is capable of everything from rich, dubby rhythmic repeats, to metallic resonant flanges. It is unique in being able to generate loops as long as 22 seconds, opening up a new palette of sonic possibilities for the avant-garde, ambient, or adventurous musician.

Polyphrase features two independent **sliders** for left and right delay times that can be locked into an infinite feedback loop which will produce an ever-changing sample of audio as each channel overlaps with another. This makes Polyphrase a tool for exploration capable of achieving the same kind of harmonic oscillation found on Steve Reich's seminal tape piece "Piano Phase".

The **time** knob interacts with the left and right faders by providing nine different maximum delay times starting at 85 milliseconds, and doubling in value as the parameter is increased up to 22 seconds. Each new delay section is cross faded into the signal path, an important design consideration that avoids any pitch shifting artifacts and is useful for creating new and often unexpected musical phrases when used with high repeat settings.

Three **echo styles** are available, and each style configures its own dedicated routing for the delay feedback path. "Dual stereo" provides two independent echos, and they can either be stacked in mono, or routed out of each stereo channel. In "ping pong" mode, each delay feeds back into the other, creating either a classic stereo ping pong sound (with each repeat bouncing between the left and right channel), or a multi-tap delay effect (when used in mono). The last mode is a mono delay - it routes the feedback path to the IN R, OUT R jacks so that you can use external effects in the echo's feedback path.

The **tone** control is a bipolar equalizer (EQ) situated in the feedback path of the echo. At 12 o'clock, the EQ has no effect on the audio. Turning the knob clockwise cuts low end - making each repeat brighter than the previous. Turning the tone knob in the counter-clockwise direction cuts high frequencies - it creates darker repeats, which-

makes Polyphrase capable of achieving similar timbre to the storied analog, bucket-brigade delays.

*The echo signal can be pitch modulated with the **rate** and **depth** controls for a sine wave style chorus / vibrato, or with a random wave for detuning effects similar to aging tape echos.*

*Finally, Polyphrase has a fully featured **midi input** that provides tempo sync, full remote control of all parameters on the faceplate, and access to 9 onboard user preset slots.*

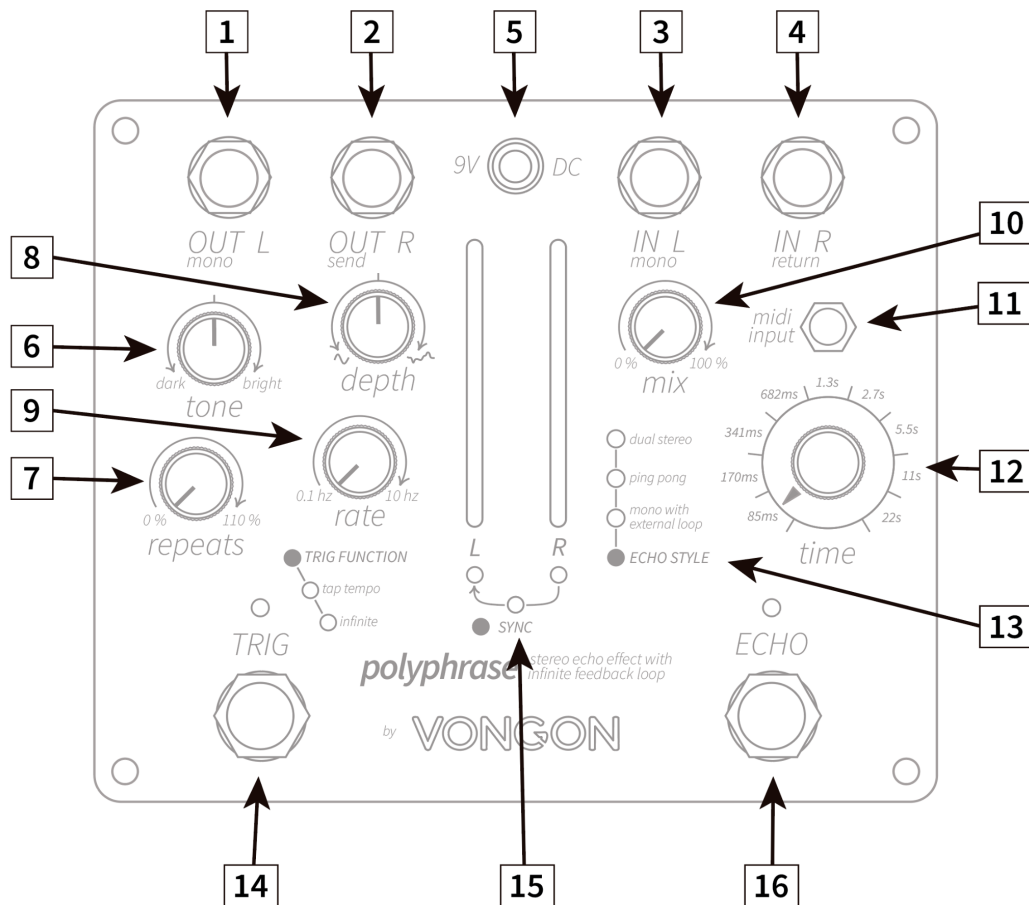
FEATURES

- *Delay times from 5 milliseconds to 22 seconds*
- *Two delay lines that can be used in stereo or stacked in mono*
- *Infinite feedback*
- *External feedback path*
- *Tone control in the feedback path*
- *Echo pitch modulation with sine or random style waveform*
- *Tap tempo*
- *Midi tempo sync*
- *9 onboard user presets accessible via midi program change (PC) messages*
- *Remote control of all parameters on the faceplate via midi continuous controller (CC) messages*
- *3 gain configurations for line level, instrument level, or low instrument level*
- *Housed in a single block of walnut, CNC routed, hand sanded & polished*

SPECIFICATIONS

- *141mm x 121mm x 45mm*
- *1/4" mono jacks*
- *Input impedance: 1M Ω*
- *Output impedance: <1k Ω*
- *Current draw: 200mA*
- *Soft-touch foot switches*
- *Buffered bypass*

FRONT PANEL



- 1) LEFT OUTPUT:** 1/4" jack, unbalanced signal output, instrument or line level.
- 2) RIGHT OUTPUT:** 1/4" jack, unbalanced signal output, instrument or line level. Echo send in "mono with external loop" echo style.
- 3) LEFT INPUT:** 1/4" jack, unbalanced signal input, instrument or line level
- 4) RIGHT INPUT:** 1/4" jack, unbalanced signal input, instrument or line level. Normalled to left input. Echo return in "mono with external loop" echo style.
- 5) POWER INPUT:** 9VDC center negative, 200mA

6) TONE CONTROL: EQ in feedback path of echo, turn clockwise for brighter repeats and counter clockwise for darker

7) REPEATS CONTROL: Feedback amount for delay lines, from 0% for a single repeat up to 110% for self oscillation and distortion.

8) DEPTH CONTROL: Depth of pitch modulation on echo signal. At 12 o'clock, there is no pitch modulation. Counter clockwise for sine wave modulation and clockwise for random modulation.

9) RATE CONTROL: Speed of pitch modulation on echo signal.

10) MIX CONTROL: Balance of dry and wet signals.

11) MIDI INPUT: Type B, 3.5mm TRS input jack

12) TIME CONTROL: 9 discrete max echo times ranging from 85 ms to 22 sec. No pitch modulation artifacts when adjusted.

13) ECHO STYLES: Reroutes the echo feedback paths.

- **DUAL STEREO:** two independent echos that can be used in stereo or stacked in mono.
- **PING PONG:** Echo's feedback into each other
- **MONO:** Mono echo with feedback path routed to Right input and output jacks for external processing.

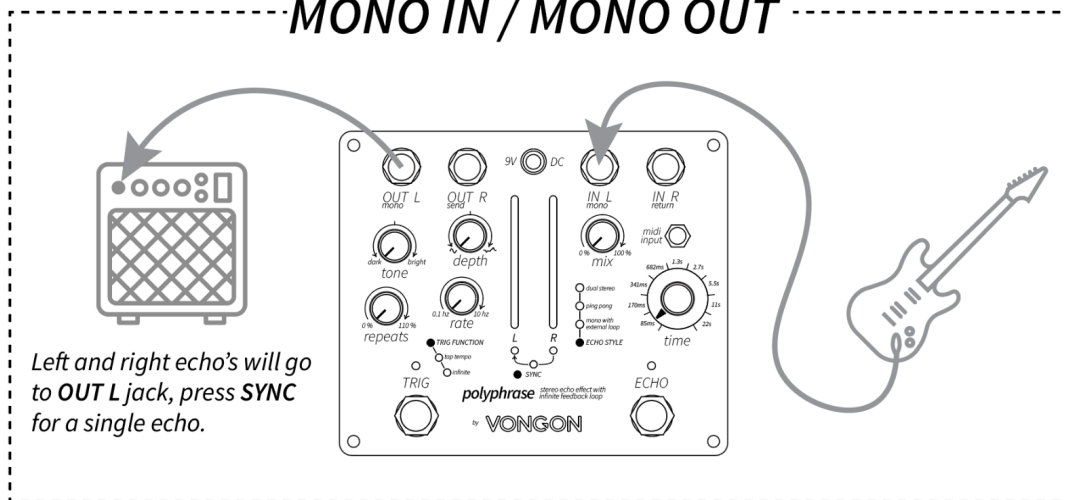
14) TRIG: footswitch for tap tempo or toggles infinite mode, depending on "TRIG FUNCTION" selection.

15) LEFT AND RIGHT SLIDERS: time control for delays that scale the delay time from x1 to x0.05, press "SYNC" to lock both delays to the left slider.

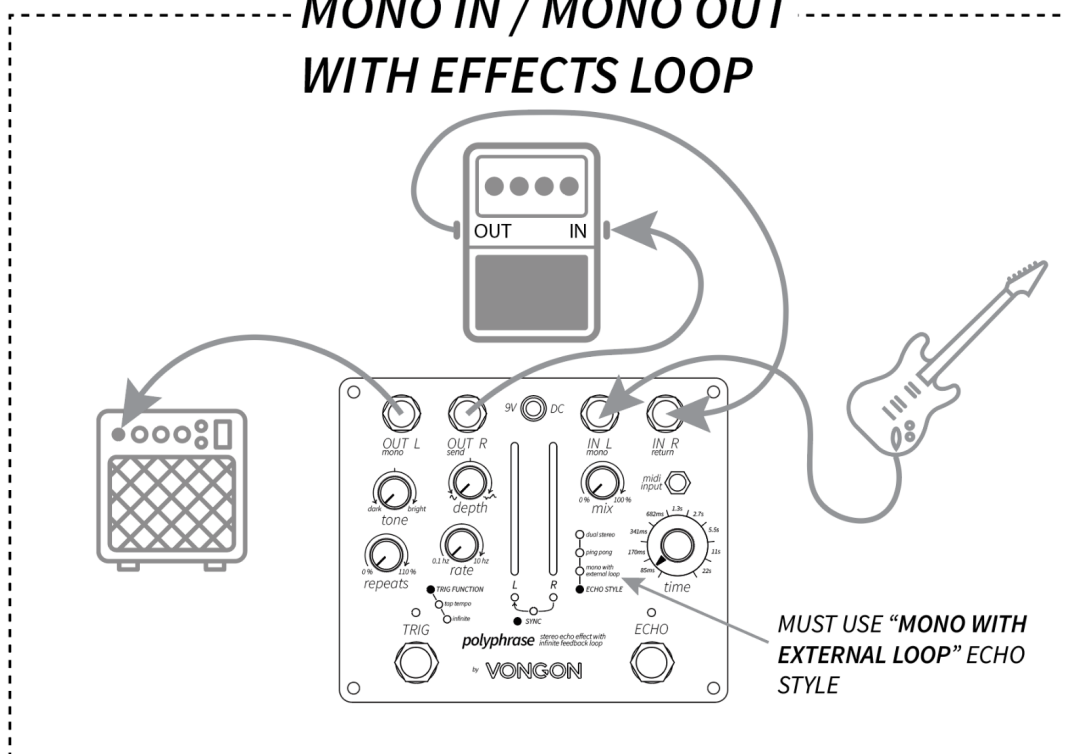
16) BYPASS: footswitch to toggle effect on/off, buffered bypass. Hold for 3 seconds and the bypass LED will blink quickly indicating the delay buffers have been cleared.

MONO CONNECTIONS

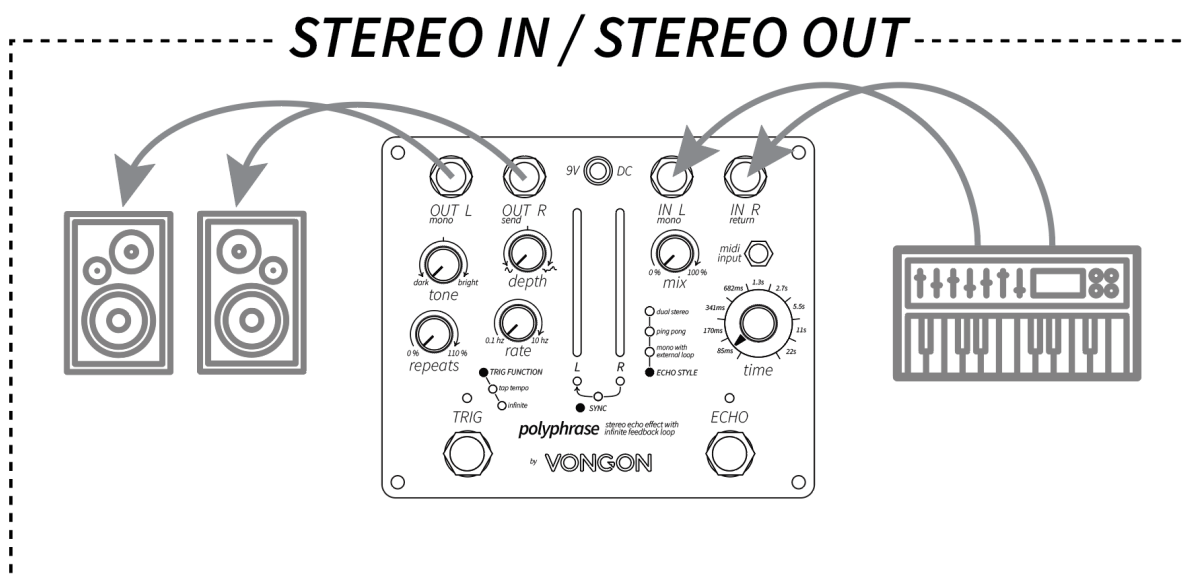
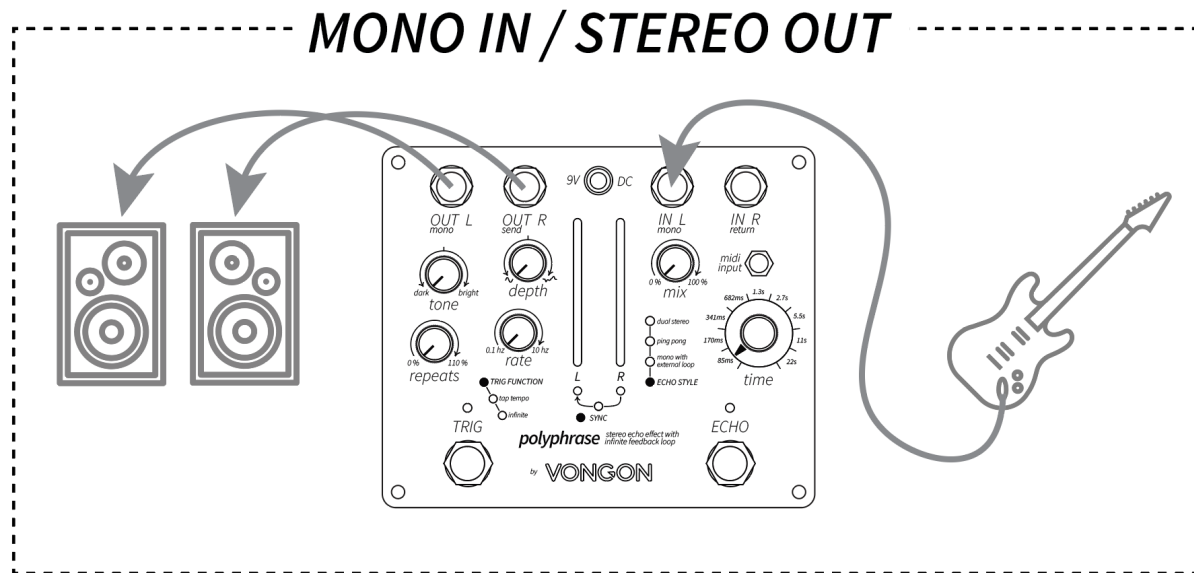
MONO IN / MONO OUT



MONO IN / MONO OUT WITH EFFECTS LOOP

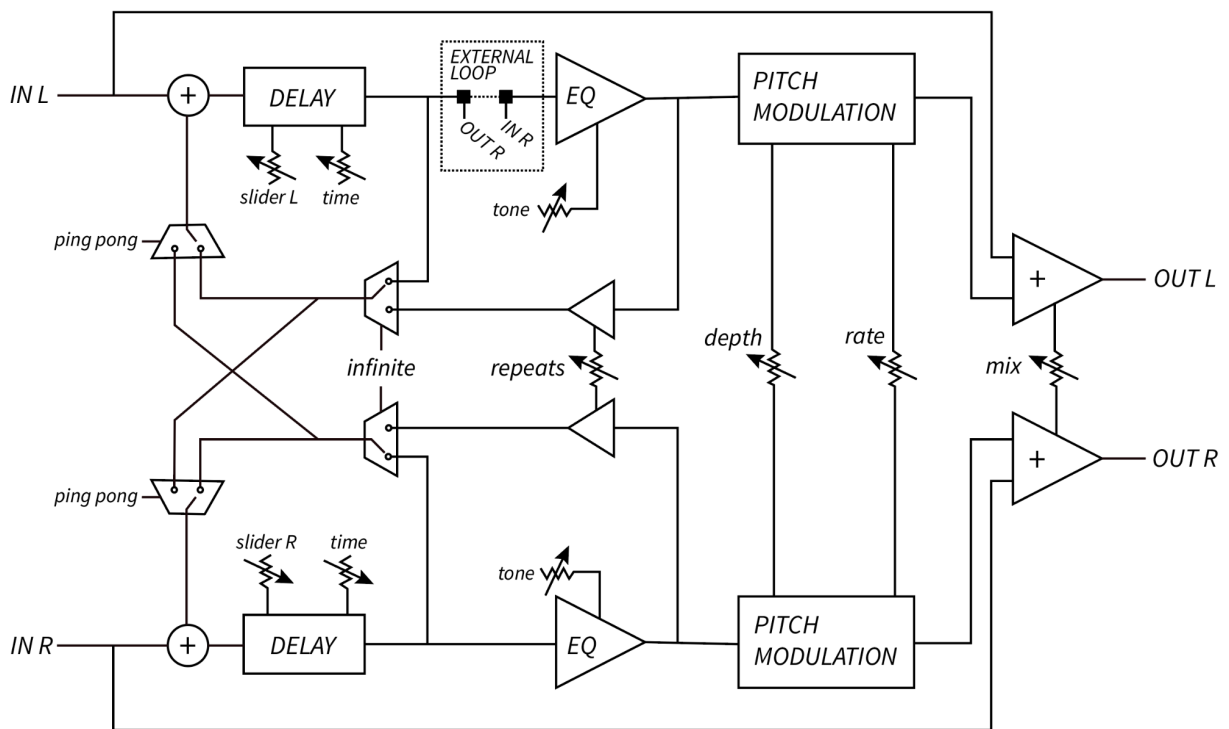


STEREO CONNECTIONS



CIRCUIT DIAGRAM

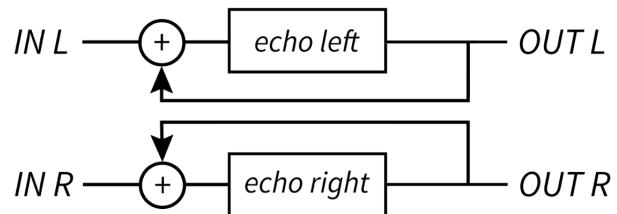
Simplified circuit diagram of the signal flow inside Polyphrase.



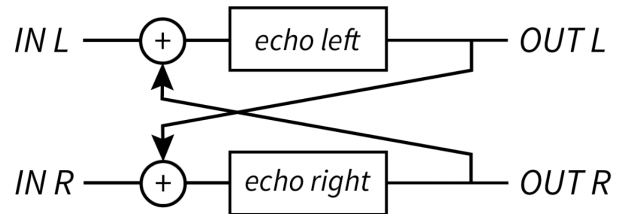
ECHO STYLES

The three echo styles reconfigure the echo's feedback path as shown below.

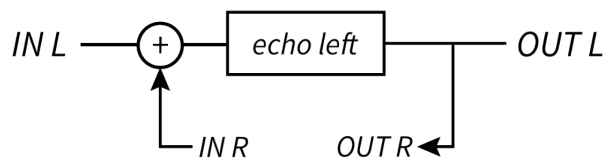
DUAL STEREO



PING PONG



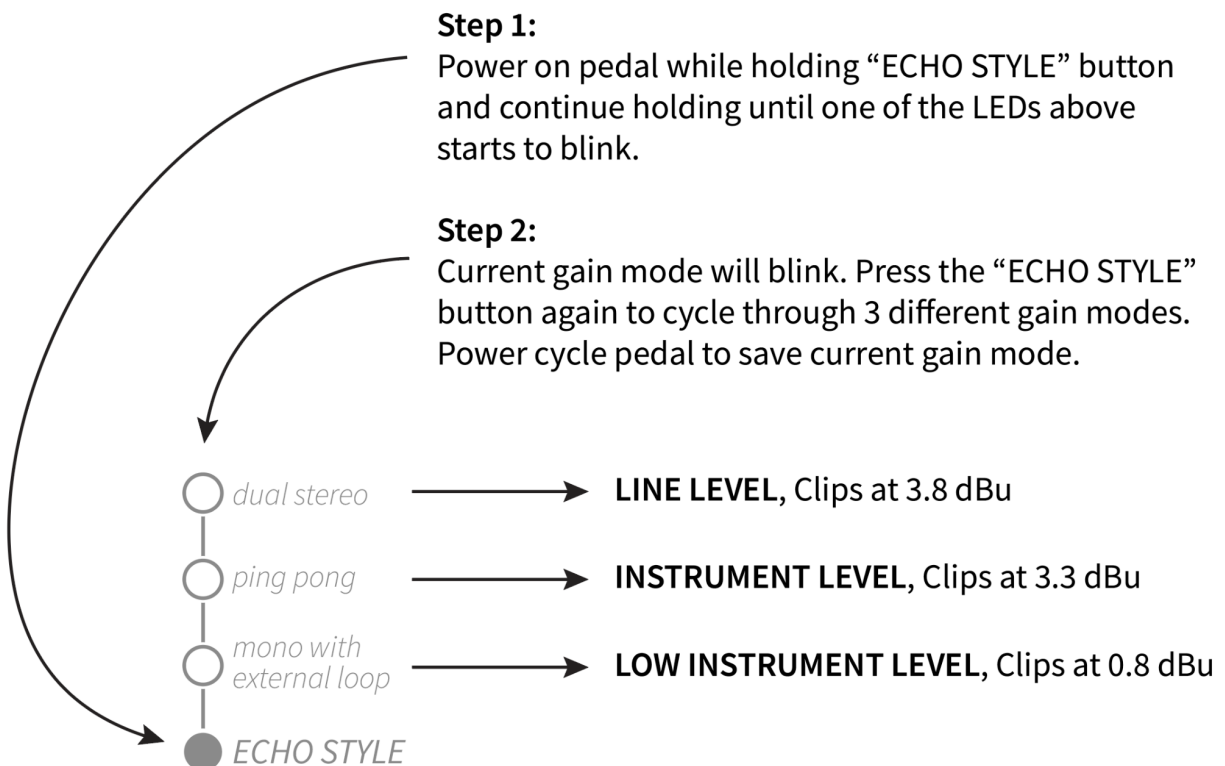
MONO WITH EXTERNAL LOOP



GAIN MODES

POLYPHRASE supports three gain configurations that make it useful with different audio sources. By default, the pedal is in “instrument level” mode. If your input signal is clipping or if you hear too much noise, try adjusting the mode by following the steps below. The pedal will always remember the most recently used mode (even between power cycles).

Note: The “line level” mode will still clip when using particularly loud audio sources. If you hear any clipping, you should turn down the signal going to the pedal. Although, there is no harm in clipping the pedal if that sounds good to you!



MIDI

Polyphrase's midi input provides tempo sync, full remote control of all parameters on the faceplate, and access to 9 onboard user preset slots. See implementation details below.

MIDI CONTROL CHANGE (CC) TABLE

When the pedal receives Midi Control Change messages on its assigned midi channel, it will internally set parameters to the new midi value. Manually adjust the faceplate parameter to reset the value to the physical faceplate control.

MIDI MESSAGE	PARAMETER	VALUES
CC #1	REPEATS	0-127
CC #2	TONE	0-127
CC #3	DEPTH	0-127
CC #4	RATE	0-127
CC #5	SLIDER L	0-127
CC #6	SLIDER R	0-127
CC #7	MIX	0-127
CC #8	TIME	0-8: 85ms, 9-22: 170ms, 23-37: 341ms, 38-56: 682ms, 57-74: 1.3s, 75-91: 2.7s, 92-106: 5.5s, 107-120: 11s, 121-127: 22s
CC #9	ECHO STYLE	0-43: DUAL STEREO, 44-87: PING PONG, 88-127: MONO
CC #10	SYNC	0-63: OFF, 64-127: ON
CC #11	TRIG MODE	0-63: OFF, 64-127: ON
CC #13	BYPASS	0-63: OFF, 64-127: ON
CC #14	INFINITE	0-63: OFF, 64-127: ON
CC #15	TAP TEMPO	Any CC value triggers tap
CC# 16	TRAILS	0-63: OFF, 64-127: ON
CC #17	MIDI CLOCK ENABLE	0-63: ENABLED, 64-127: DISABLED

PRESETS

Polyphrase has 9 onboard user preset slots that can be read and written to via MIDI PROGRAM CHANGE (PC) messages. These presets are saved between power cycles.

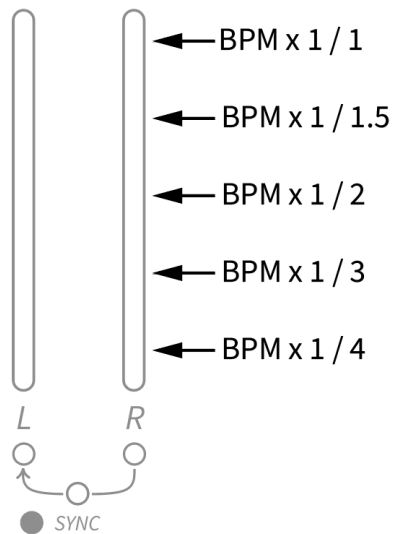
Example Read/Write to preset 1:

- **Write to Preset 1:** Adjust pedal to desired sound, send a MIDI PC# 11. That sound is now saved into preset slot #1.
- **Recall Preset 1:** Send a MIDI PC#1 message, the pedal will read the sound stored in preset slot #1 and internally reset parameters.

PRESET	READ (MIDI MESSAGE)	WRITE (MIDI MESSAGE)
1	PC #1	PC #11
2	PC #2	PC #12
3	PC #3	PC #13
4	PC #4	PC #14
5	PC #5	PC #15
6	PC #6	PC #16
7	PC #7	PC #17
8	PC #8	PC #18
9	PC #9	PC #19

MIDI CLOCK SYNC

Polyphrase accepts MIDI clock signals via the MIDI input jack. These messages are 24 ppq messages that can be sent via MIDI computer sequencers or from drum machines. To enable the sending of these messages, consult the user manual for your MIDI device. As soon as a MIDI clock signal is detected, the delay times will sync to the MIDI clock rate. The sliders can be adjusted to scale the clock divider for each channel. The time knob will multiply or divide these ranges by powers of 2.



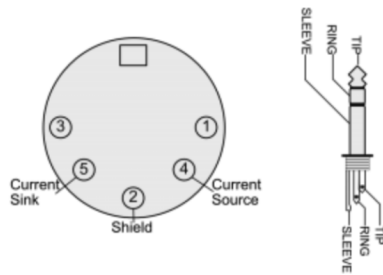
MIDI CHANNEL

By default, Polyphrase listens to midi channel 1. You can change the midi channel by following the steps below.

1. Power on the pedal while holding the “SYNC” button and continue holding until the sync LED starts blinking.
2. Now send a midi CC message on the desired channel. The sync LED will stop blinking and the pedal will now listen to messages on that midi channel. This setting will be remembered between power cycles.

MIDI ADAPTER

The MIDI input is a 1/8" stereo jack that is wired for a Type B midi adapter. If you are unsure what type of adapter to use, you can purchase one directly from Vongon on our website.



MIDI Signal	MIDI Connector	Stereo Minijack
Current Source	Pin 4	Tip
Current Sink	Pin 5	Ring
Shield	Pin 2	Sleeve

POWERING

POLYPHRASE was designed to operate using your typical center negative, regulated 9V DC power supply. The pedal is protected against reversed polarity and overvoltage conditions. Always check your power supply for proper voltage and polarity before connecting. There is no battery connection inside the pedal.

EXTENDED WARRANTY

Vongon will repair or replace any malfunctioning product for a period of 2 years after purchase date. Problems resulting from modifications or misuse may cancel this warranty. The owner will cover all shipping expenses. This warranty applies only to the original owner of the product. Proof of purchase might be required.

In general, the best thing to do is to contact us as soon as possible with a description of the symptoms, even if the warranty is expired.

FIRMWARE UPDATE

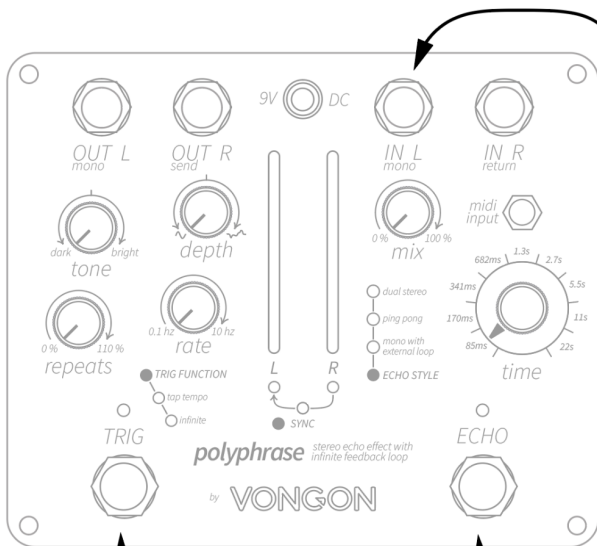
There is new firmware available for Polyphrase, version 2.3. If your Polyphrase has the new firmware, the purple TRIG light will blink three times when you power on the pedal.

[DOWNLOAD FIRMWARE VERSION 2.3 HERE](#)

Firmware v2.3 Updates:

- Trails mode
 - Midi CC #16, 0-63: OFF, 64-127: ON
 - Hold the “TRIG FUNCTION” button during power up to adjust mode. You will see the tap tempo or infinite led blink to indicate the trails mode.
 - Tap tempo (blinks): Analog bypass, no trails
 - Infinite (blinks): Digital pass through, trails
- Midi clock tracking improvement, more stable.

How to update POLYPHRASE firmware



The diagram shows the Polyphrase pedal interface with the following controls and settings:

- OUT L** (mono) and **OUT R** (send)
- tone** knob (dark to bright)
- depth** knob
- repeats** knob (0% to 110%)
- rate** knob (0.1 Hz to 10 Hz)
- TRIG FUNCTION** button (tap tempo, infinite)
- TRIG** LED
- 9V** and **DC** power inputs
- IN L** (mono) and **IN R** (return)
- mix** knob (0% to 100%)
- time** knob (682ms, 1.3s, 2.7s, 5.5s, 11s, 22s, 85ms, 170ms, 342ms)
- ECHO** LED
- ECHO STYLE** selector (dual stereo, ping pong, mono with external loop)
- SYNC** button

1. Power on POLYPHRASE while holding down both footswitches. Both purple LEDs should start to slowly blink, indicating that the pedal is ready to load new firmware.

2. Play the firmware .WAV file into the **IN L** jack. You can use a phone, computer, audio interface, etc.

If the pedal is correctly reading the firmware, the **TRIG** led will blink quickly for 5 to 10 seconds, then the **ECHO** led will blink once. This process will repeat until the firmware is completely loaded.

If the pedal is not able to read the audio file, both purple LEDs will blink quickly. Try powering off the pedal and starting again. Try adjusting the volume of the audio file.

If your pedal has the new firmware, the purple **TRIG** light will blink three times when the pedal is powered on.

Please contact support@vongon.com for questions.

CONTACT

Please feel free to reach out to Ryan or Katie with any questions -
support@vongon.com

CHANGE LOG

VERSION	DATE	CHANGES
1.0	Oct 1, 2022	Initial commit
2.2	Mar 22, 2023	Updated for firmware v2.2
2.3	Nov 14, 2023	Updated to firmware v2.3

FIRMWARE UPDATES

Firmware v2.2 Updates:

- Improved stereo image of dry signal
- The filters in the tone control have a wider range
- The time LEDs more accurately reflect the delay time
- Clear delay buffer by holding down bypass footswitch for 3 seconds
- Midi Updates
 - Sliders can adjust tempo in subdivisions: 1/1, 1/1.5, 1/2, 1/3, 1/4
 - Midi Clock can be disabled via CC#17 (0-63: Enabled, 64-127: Disabled). This setting is remembered between power cycles.
 - After midi clock signals stop, the midi clock tempo will remain until controls are manually adjusted
 - BUG FIX: Midi PC messages are correctly filtered by midi channel

Firmware v2.3 Updates:

- Trails mode
 - Midi CC #16, 0-63: OFF, 64-127: ON
 - Hold the “TRIG FUNCTION” button during power up to adjust mode. You will see the tap tempo or infinite led blink to indicate the trails mode.
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