SIREN
User Manual

The **Oscillator Devices SIREN** is a Stereo MIDI Volume Controller. Its two fully analog channels can be independently set from -96dB (Mute) to a whooping +32dB boost. The channels can be split before, or mixed after the volume control. The **SIREN** has high quality, low noise buffers and is specifically designed not to color your tone.

The **SIREN** has two internal LFOs to drive the volume control. That makes it a full blown MIDI Controlled Analog Stereo Tremolo. Both LFOs operate completely independent. Different waveforms (Sine, Triangle, Rectangle and Ramp in both directions) can either be free running from 100ms to 1.2s, or can be synced to MIDI clock.

On top of that the **SIREN** supports *Fade* and *Swell* functions. While *Fade* slowly fades to another volume, the *Swell* function snaps back to the original volume when done, ready to be triggered again.
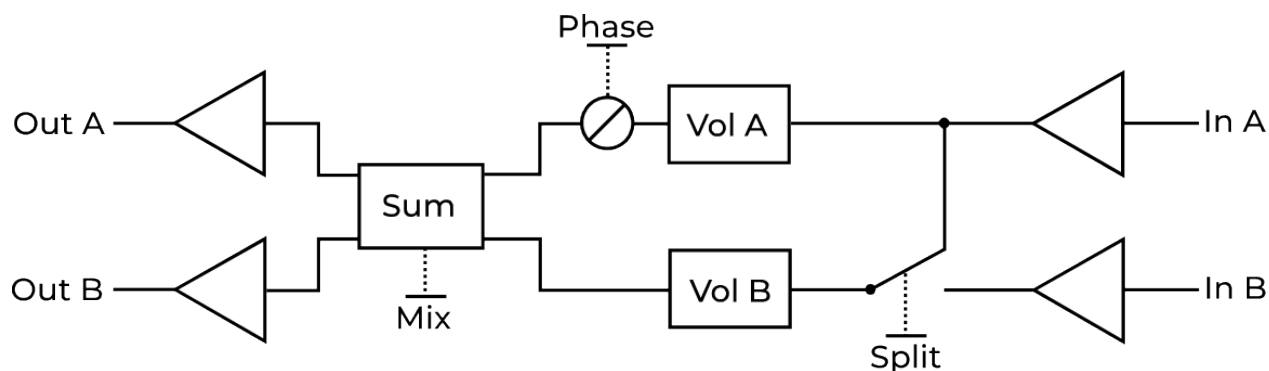

Connections

- **Input A/B:** Two 1/4" mono jacks for inputs of either a guitar, or the output of other FX devices. Check chapter Input Sensitivity for high input levels like active pickups. Input impedance 1MΩ.
- **Output A/B:** Two 1/4" mono jacks for outputs to other FX devices, amplifiers, modelers etc. Output impedance 500Ω.
- **Power:** 9VDC only, Center Negative, Boss Style power supply. Min. 150mA.
- **MIDI In:** 3.5mm (1/8") MIDI Input according to MIDI Standard **MIDI TRS Type-A.**
- **MIDI Thru:** 3.5mm (1/8") , latency free MIDI Thru according to MIDI Standard **MIDI TRS Type-A**
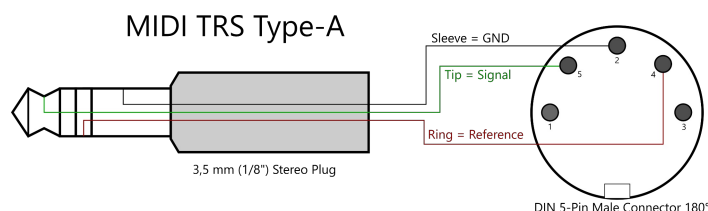
Overview

- **Split:** The Split function connects Channel A with Channel B BEFORE the volume control.
- **Mix:** The Mix function blends Channel A with Channel B AFTER the volume control. The blended signal is provided on Out A and Out B.
- **Phase:** With the Phase function, the phase of Channel A is flipped. This is useful for blended signals.

Controls

All of the following controls are also available as MIDI commands.

- **CH A/B:** The two knobs labeled *CH A* and *CH B* are setting the volume of channels A and B. MIDI commands override the knob settings (except the MIDI command for relative volume). When turned, the knobs override MIDI commands.
- **PHASE:** The *PHASE* button flips the phase of Channel A. It lights up, when the phase is flipped.
- **LEDs**: The LEDs light up corresponding to the volume of the respective channel. On mute they faintly blink green. When the volume is raised the blinking stops and they become brighter. Starting at unity gain a red color is mixed in and gets brighter until full volume is reached.
- **SPLIT/MIX:** To select the Split and Mix settings press and hold the *PHASE* button until it starts flashing. By repeatedly pressing the *PHASE* button, you can scroll through any combination of Split and Mix shown by the orange light of the LEDs. Press and hold the *PHASE* button to save the selection.

Input Sensitivity

Upon delivery the **SIREN** is set to +6dB pre-gain. This is ideal for guitars with passive pickups and normal levels of guitar pedals. In this setting, unity gain is with the knobs at noon, or MIDI CC commands half way (64).

When running hot signals into the **SIREN**, for example active pickups or already boosted levels, said pre-gain can be set to 0dB to avoid clipping. To set the pre-gain, unscrew the backplate and set the DIP switch between the sockets to either On (0dB) or Off (+6dB) for each channel seperately.

Controlling Volume

The volume of both channels can either be set individually, or for both channels at the same time. The volume can be set as an absolute value (ideal for gain staging), or relative to the knob position (best for adjusting the overall volume without changing MIDI programming).

CC				Function
Channel A	Channel B	Channel A+B	#	
20	40	60	0-127	Volume of respective channel. 0 = Mute, 64 = Unitiy Gain, 127 = +32dB (at +6dB input sensitivity) Overrides the setting of the knob.
29	49	69	0-127	Volume of respective channel relative to the setting of the knob, i.e. CC 69 127 results in the volume according to the setting of the knobs. For example: Knob at 12 o clock, CC 69 127 results in unity gain. (only version 1.0.1)

Tremolo/LFO

The volume control can be driven by two LFOs, either free running from 100ms to 1.27s time, or synced to MIDI clock with various time divisions. Tremolo functions are only accessible via MIDI. The LFOs can run in different waveforms:

- **Sine:** A normal, smooth sine wave
- **Triangle:** Almost like a sine wave, but less musical, more static
- **Rectangular**: Perfect for a slicer or stutter effect
- **Ramp:** Forward or backward, for repeated swells, for example.

Every channel has its own set of Tremolo commands. To fully define a tremolo, two messages are necessary. The first one to determine waveform and depth, the second one to determine the speed of the waveform.

The following commands are for defining waveform and depth. They all use the current volume as reference. That means, that a sine wave tremolo with depth = 127 swings from the current volume all the way down to mute. If you change the volume when the tremolo is running, the swing is shifted, too.

CC				Function
Channel A	Channel B	Channel A+B	#	
21	41	61	0-127	Sine Wave Tremolo (0 = Off, 127 = Full Depth)
22	42	62	0-127	Triangular Wave Tremolo (0 = Off, 127 = Full Depth)
23	43	63	0-127	Rectangular Wave Tremolo (0 = Off, 127 = Full Depth)
24	44	64	0-127	Sawtooth Tremolo, Ramp Forward (0 = Off, 127 = Full Depth)
25	45	65	0-127	Sawtooth Tremolo, Ramp Backward (0 = Off, 127 = Full Depth)

The following commands are for setting the speed. Note, that speed of 1/4th note MIDI Clock is default. If you only want to use these (which is probably the most common) you won't need the speed command, at all.

CC				Function
Channel A	Channel B	Channel A+B	#	
30	50	70	0	Tremolo off
			1	Synced to MIDI Clock 1/4th note (Default)
			2	Synced to MIDI Clock 1/8th note
			3	Synced to MIDI Clock triplets
			4	Synced to MIDI Clock 1/16th note
			5	Synced to MIDI Clock dotted 1/8th note
			6	Synced to MIDI Clock half note
			7	Synced to MIDI Clock whole note
			8	Synced to MIDI Clock 1/32th note (only version 1.0.1)
			10-127	Free Running from 100ms (=10) to 1.27s (=127)

If you're running the Tremolo in stereo and want to change the relation between them, there is the delay command. With that the LFO of one channel can be delayed to create mind bending stereo effects. The delay is in 1/24th of one duration. For example, if you want to shift it so, that one sine wave goes high, exactly when the other goes low, use 12.

CC				Function
Channel A	Channel B	Channel A+B	#	
31	51	71	0-24	Delay the tremolo by 1/24th of a full duration

Finally, there is a single command to control the depth without changing the waveform.

CC				Function
Channel A	Channel B	Channel A+B	#	
32	52	72	0-127	Depth of currently running Tremolo (0=off, 127 = Full)

Fade and Swell

The *Fade* and *Swell* functions are basically a one shot tremolo with a ramp waveform. Use *Fade* to slowly fade in, fade out, or fade to a different volume. *Fade* stays at the target volume when done. That's the difference to *Swell*. *Swell* snaps back to the initial volume, when the ramp is finished, ready to be triggered again. That way you can create slow gear swell effects.

CC				Function
Channel A	Channel B	Channel A+B	#	
26	46	66	0-127	One Shot Swell. Starts at current volume ends at the CC value of this command
27	47	67	0-127	Fade. Fade to CC value of this command (e.g. 0 for a fade out, or 127 to fade to full volume)

The time it takes for the fade and swell to complete is set with the same command like the Tremolo:

CC				Function
Channel A	Channel B	Channel A+B	#	
30	50	70	1	Synced to MIDI Clock 1/4th note (Default). The Fade/Swell takes 4 quarter notes to complete.
			2	Synced to MIDI Clock 1/8th note . The Fade/Swell takes 4 eight notes to complete.
			3	Synced to MIDI Clock triplets. The Fade/Swell takes 4 triplets to complete.
			4	Synced to MIDI Clock 1/16th note. . The Fade/Swell takes 4 sixteenth notes to complete.
			5	Synced to MIDI Clock dotted 1/8th note. The Fade/Swell takes 4 dotted eight notes to complete.
			6	Synced to MIDI Clock half note. The Fade/Swell takes 4 half notes notes to complete.
			7	Synced to MIDI Clock whole note. The Fade/Swell takes 4 whole notes to complete.
			10-127	The fade/swell takes from 100ms (=10) to 1.27s (=127) to complete.

MIDI Command Split/Mix and Phase

With the following command, the Mix, Split and Phase functions can be controlled. Remember that these are only temporary. To set Split, Mix and Phase permanently, use the button (see chapter Controls)

CC	#	Function
102	0	Mix = Off, Split = Off
	1	**Mix = On**, Split = Off
	2	Mix = Off, **Split = On**
	3	**Mix = On, Split = On**

CC	#	Function
103	0-1	0 = Phase of channel A normal, 1 = Phase of channel A inverted

MIDI Channel

The **SIREN** ships in omni mode (i.e. it responds to any channel).

To change the MIDI channel, proceed as follows:

1. Disconnect the device from the power supply
2. Press and hold the **PHASE-Button** and restore the power while the button is pressed.
3. After the boot process is complete, the PHASE LED starts to flash. Press the PHASE-button according to the number of the desired channel (e.g. twice for channel 2). The **SIREN** acknowledges this by emitting short flashing pulses corresponding to the number of the channel.
4. Once the desired channel is set, press the PHASE-button and hold it down until the LED stops flashing.
5. Disconnect the supply voltage. The next time the **SIREN** is started, it reacts to the selected MIDI channel.

To put the **SIREN** in omni mode skip step 3.

To change the MIDI channel via MIDI command, the following two commands have to be sent directly after another.

CC	#	Function
119	0-16	Set MIDI channel 1-16, 0 for Omni
119	127	Saving the MIDI channel. The Device restarts.

Presets

To save on MIDI commands or to work with MIDI controllers that only support PC commands, the *SIREN* supports 16 user presets followed by 16 factory presets.

To save a preset proceed as follows:
1. Set everything how you want it to be.
2. Press and hold the PHASE-Button. The button starts flashing.
3. Send the PC command that you want to be associated with the current settings (between PC 00 and PC 15).
4. The flashing stops and the preset is saved.

On top of the 16 user presets (PC 00 to PC 15), the *SIREN* comes with 16 factory presets (PC 16 to PC 31). These presets should give you a good starting point for experimentation. These are the factory presets along with the MIDI commands that are used to achieve them:

Preset Nr.	PC	Description	MIDI Commands
1	16	Both channels unity gain. No tremolo	CC 60 64
2	17	Slight sine wave tremolo on both channels. Free Running 400ms	CC 61 24 CC 70 40
3	18	Slight sine wave tremolo on both channels, slightly out of phase, free running 400ms	CC 61 24 CC 70 40 CC 31 06
4	19	Sine wave tremolo on both channels, synced to MIDI clock 1/4th notes	CC 61 40 CC 70 01
5	20	Triangle wave tremolo on both channels, synced to MIDI clock 1/8th notes	CC 62 40 CC 70 02
6	21	Triangle wave tremolo on both channels, synced to MIDI clock dotted 1/8th notes on Channel A, 1/4th on Channel B	CC 62 64 CC 30 05 CC 40 02
7	22	Rectangle wave tremolo full depth on both channels, synced to MIDI clock 1/16th	CC 63 127 CC 70 04
8	23	Rectangle wave tremolo full depth on both channels, half wave out of phase, synced to MIDI clock 1/8th	CC 63 127 CC 70 02 CC 31 12
9	24	Slicer, very fast, full rectangular tremolo 100ms	CC 63 127 CC 70 10
10	25	Ramp forward, full depth, synced to MIDI clock 1/4th notes.	CC 64 127 CC 70 01
11	26	Ramp backward, full depth, synced to MIDI clock 1/4th notes.	CC 65 127 CC 70 01
12	27	Ramp forward on Channel A, Ramp backward on Channel B, synced to MIDI clock 1/4th	CC 24 127 CC 45 127 CC 70 01
13	28	Ramp forward on Channel A synced to MIDI clock 1/4th, Ramp backward on Channel B, synced to MIDI clock triplets	CC 24 127 CC 45 127 CC 30 01 CC 50 03
14	29	One Shot Swell starting at mute ramping to unity gain in 960ms	CC 60 00 (only for the first time) CC 66 64 CC 70 96
15	30	Fade out to mute, both channels in 1.27s	CC 67 00 CC 70 127
16	31	Fade in to unity gain, both channels in 1.27s	CC 67 64 CC 70 127

Applications

Stereo Volume Control

This setup controls the volume of a stereo signal chain. Use an expression pedal, connected to your MIDI controller, as volume pedal, or simply set up patches for song sections with different volumes (lead vs. rhythm). For this setup choose Mix Off and Split Off.
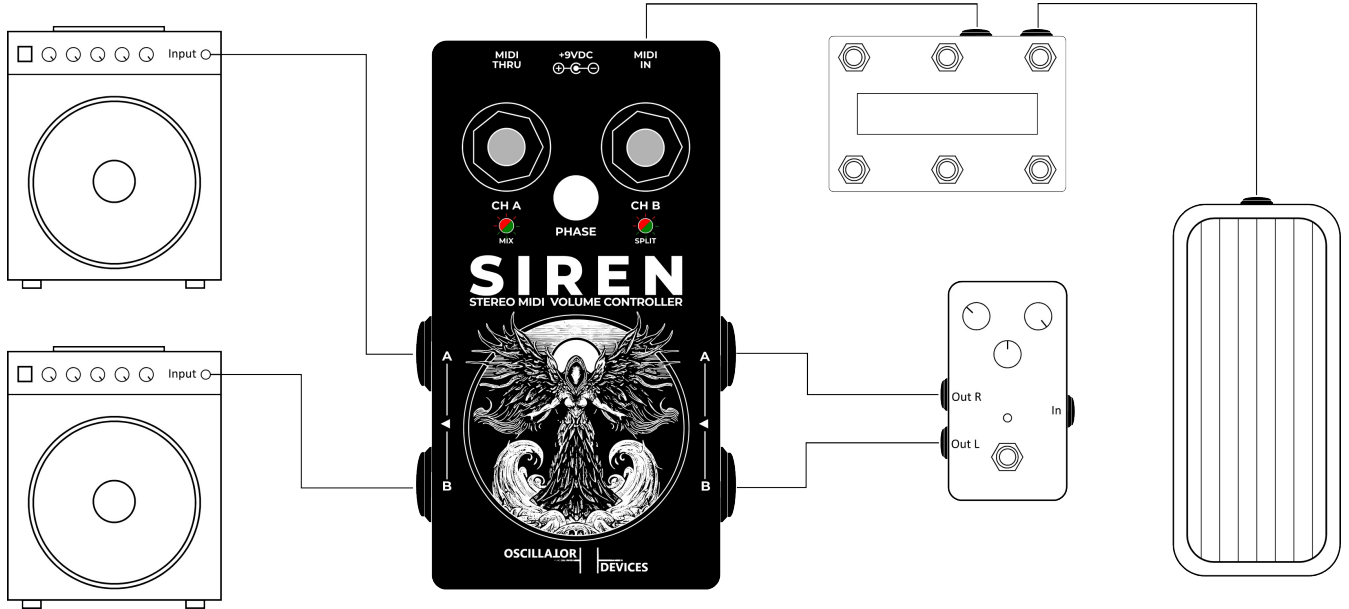
Mono In/Stereo Out

Split the signal of Channel A to both outputs BEFORE the volume control. The stereo path after the *SIREN* can be set to different volumes, for example to push two different drive pedals or two amps in a stereo amplifier setup. For this choose Split On and Mix Off.

Stereo In/Mono Out

Blend the channels AFTER the volume control. This can either be, to use a stereo setup with a mono amp for small gigs, or to blend two signals, for example a clean blend. When blending two signals, phase issues can occur, when one signal path inverts the signal. For that case the *SIREN* can flip the phase of channel A, either with the Phase-Button or MIDI command. For this choose Split Off and Mix On. Set the Phase button if your signal sounds thin.

Pre- and Post-Gain FX Loop

In a mono setup, the two channels can be combined to form a FX loop with pre- and post-gain. That way you can dial back or push the volume that's going into the pedals (pre-gain) and control the volume of the output (post-gain). Of course you can use one channel as volume control and the other as Tremolo in a different spot at your signal chain. For this use Split Off and Mix Off.