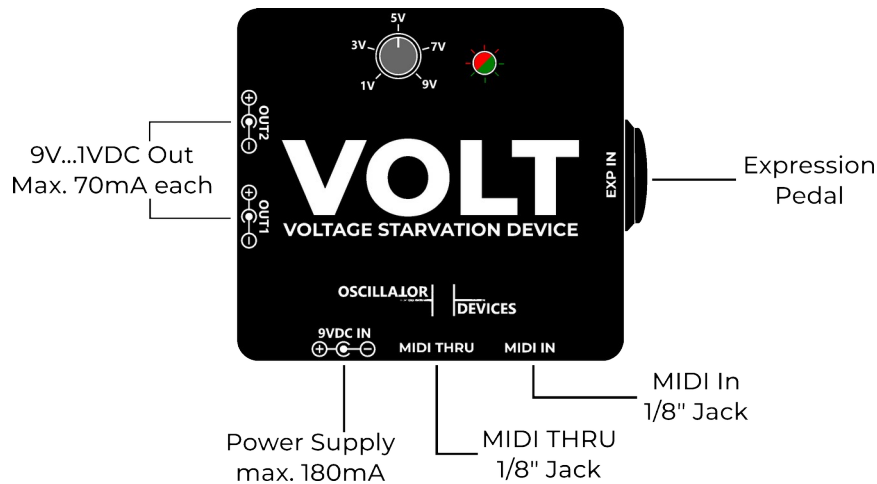


VOLT

User Manual

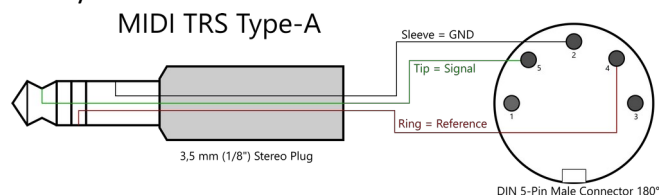
The **Oscillator Devices VOLT** is a MIDI controllable voltage source, designed to starve analog guitar pedals. Dial in the output voltage on two independent outputs ranging from the input voltage down to 1V. When set to maximum (9V), the voltage control circuit is disabled and the output is supplied directly from the input voltage.

The expression pedal input allows control over the outputs via an expression pedal. The output's range can be set and different expression modes allow the expression range to be controlled by the knob.



Connections

- **EXP IN:** A 1/4" stereo (TRS) socket to connect a regular expression pedal. Expression pedal resistance doesn't matter.
- **OUT1/OUT2:** 9V...1VDC Output, Center Negative, Boss Style. Do not exceed 50mA. When set to 9V, the voltage control circuit is disabled and power is supplied directly from the power supply input.
- **+9VDC In:** Power Supply. 9VDC only, Center Negative, Boss Style with a maximum current draw of 180mA.
- **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**



Dying Battery Simulator

The **VOLT** can act as a dying battery simulator. That means, that like with a real drained battery, not only the voltage is lowered, but also the internal resistance is raised. How much internal resistance depends on the battery and their state. Because of that the internal resistance of the outputs of the **VOLT** can be adjusted with two trim pots on the inside.

Upon opening the back of the **VOLT**, you'll see a trim pot labeled **ROUT1** for OUT1 and one labeled **ROUT2** for OUT2.

- Turning it **counter clock wise** lowers the resistance all the way down to 0Ω.
- Turning it **clock wise** raises the resistance all the way up to 500Ω.

The VOLT ships set to approx. 60Ω. That's with the trim pot at 9 o' clock pointing towards the expression input.

How much resistance do I need?

This is unfortunately a matter of taste. Batteries that are near their end have resistances between 50 and 150Ω. Here's what happens: Having a higher internal resistance means, that the voltage drops even more, when more current is drawn. Now, when a guitar signal hits the circuit, the current changes with the guitar signal and with a higher resistance also the voltage does. This gives an effect almost like a compressor.

Do not use the VOLT with digital pedals, or pedals that draw more current than 50mA.

Accuracy of Output Voltage

The voltage on the outputs *OUT1* and *OUT2* can be set from 1V to 9V. But, that's not in all cases the actual voltage on the outputs.

1. When set to 9V, the voltage control circuit is disabled and the output has the same voltage as the input voltage. This can be more or less than 9V, depending on your input voltage.
2. When having an internal resistance higher than 0Ω set, this resistance lowers the output voltage depending on the set resistance and the current drawn.

LED

There is a Dual Color LED that gets brighter with rising voltage on the outputs. The green LED shows the voltage for *OUT1*, the red LED for *OUT2*.

Knob

The knob, when turned, overrides the voltage on both outputs. See section Expression Pedal on how the knob can interact with the expression pedal.

Presets

The *VOLT* is able to save up to 128 presets. A preset saves the voltage on both outputs. To recall a preset, just send the corresponding MIDI PC message.

To save or delete a preset, send the following CC command:

CC	#	Function
116	0...127	Save preset no. 0...127
117	0...127	Delete preset no. 0...127

To complete preset saving or deletion some special commands have to be sent. Refer to chapter MIDI Commands to Save Settings or use the [WebMIDI interface](#) on the Oscillator Devices website.

MIDI Channel

The *VOLT* ships on MIDI channel 7. To change the MIDI channel use the following command

CC	#	Function
119	0...16	Set MIDI Channel (0 = Omni)

After that the MIDI channel has to be saved. Refer to chapter MIDI Commands to Save Settings or use the [WebMIDI interface](#) on the Oscillator Devices website.

MIDI Commands for Voltage

The following MIDI commands set the voltage on the outputs.

CC	#	Function
20	0...127	Sets the voltage on <i>OUT1</i> from 1V (CC20 00) to 9V (CC20 127)
40	0...127	Sets the voltage on <i>OUT2</i> from 1V (CC40 00) to 9V (CC40 127)
60	0...127	Sets the voltage on <i>OUT1</i> and <i>OUT2</i> from 1V (CC60 00) to 9V (CC60 127)

Here are a few CC values for better orientation:

CC Value	Voltage
00	1V
32	3V
64	5V
96	7V
127	9V

Expression Pedal

The expression pedal, when used, **controls the voltage on both outputs.**

Expression Modes

There are three modes for the expression pedal:

- Moving from heel to toe moves the voltage from 1V to 9V independent from knob position (Full Range)
- Moving from heel to toe moves the voltage from knob position to 9V (Default). So, if the knob is set to 5V, the expression pedal moves from 5V to 9V.
- Moving from heel to toe moves the voltage from 1V to knob position. So, if the knob is set to 5V, the expression pedal moves from 1V to 5V.

To set these modes use the following MIDI commands:

CC	#	Function
102	0	Full Range
	1	Knob sets lower limit (Heel = knob position, Toe = 9V) (Default)
	2	Knob sets upper limit (Heel = 1V, Toe = Knob position)

After that the mode has to be saved. Refer to chapter MIDI Commands to Save Settings or use the [WebMIDI interface](#) on the Oscillator Devices website.

Expression Range

The range of the expression pedal can also be set, so heel doesn't go all the way down to 1V or toe doesn't go all the way up to 9V. This can be combined with the expression modes, so you have, for example the heel position limited to 5V and the toe position limited to the knob position.

To set the range use these MIDI commands:

CC		#	Function
OUT1	OUT2		
103	106	0...127	Lower limit of the expression range (0 = 1V, 127 = 9V). Valid for all Expression Modes. (Default 0)
104	107	0...127	Upper limit of the expression range (0 = 1V, 127 = 9V). Valid for all Expression Modes. (Default 127)

After that the range has to be saved. Refer to chapter MIDI Commands to Save Settings or use the [WebMIDI interface](#) on the Oscillator Devices website.

Expression Polarity

The polarity of the expression pedal can be inverted, so heel is the higher and toe is the lower voltage. To invert the polarity use these MIDI commands:

CC		#	Function
OUT1	OUT2		
105	108	0...1	Polarity of the expression pedal. 0 = normal, 1 = inverted.

After that the polarity has to be saved. Refer to chapter MIDI Commands to Save Settings or use the [WebMIDI interface](#) on the Oscillator Devices website.

Expression Pedal Calibration

To always have the full sweep of your expression pedal, it can be calibrated. For that there are two MIDI commands. One is sent, when the pedal is at full heel position and one is sent, when the pedal is at full toe position.

CC	#	Function
118	0	Set <i>heel</i> to current pedal position
	1	Set <i>toe</i> to current pedal position

After that the calibration data has to be saved. Refer to chapter MIDI Commands to Save Settings or use the [WebMIDI interface](#) on the Oscillator Devices website.

MIDI Commands for Setup

All MIDI commands used for setup are temporary and need to be saved with a special combination of MIDI commands. The use of the [WebMIDI Interface](#) on the Oscillator Devices Website is highly recommend to do these settings.

MIDI Commands to Save Settings

To save the above settings to the pedal, three additional MIDI commands are necessary. CC 09 18, CC 09 52 followed by one of these corresponding messages:

CC	#	Function
09	1	Save MIDI Channel. For example CC 119 01 + CC 09 18 + CC 09 52 + CC 09 01
	2	Save Calibration Data. For example CC 118 00 + CC 118 01 + CC 09 18 + CC 09 52 + CC 09 02
	3	Save Expression Mode. For example full range: CC 102 00 + CC 09 18 + CC 09 52 + CC 09 03
	4	Save Range and Polarity for OUT1. For example inverting OUT1: CC 105 00 + CC 09 18 + CC 09 52 + CC 09 04
	5	Save Range and Polarity for OUT2. For example inverting OUT2: CC 108 00 + CC 09 18 + CC 09 52 + CC 09 05
	6	Save preset. For example saving to preset no. 10: CC 116 10 + CC 09 18 + CC 09 52 + CC 09 06
	7	Delete preset. For example delete preset no. 10: CC 117 10 + CC 09 18 + CC 09 52 + CC 09 07