

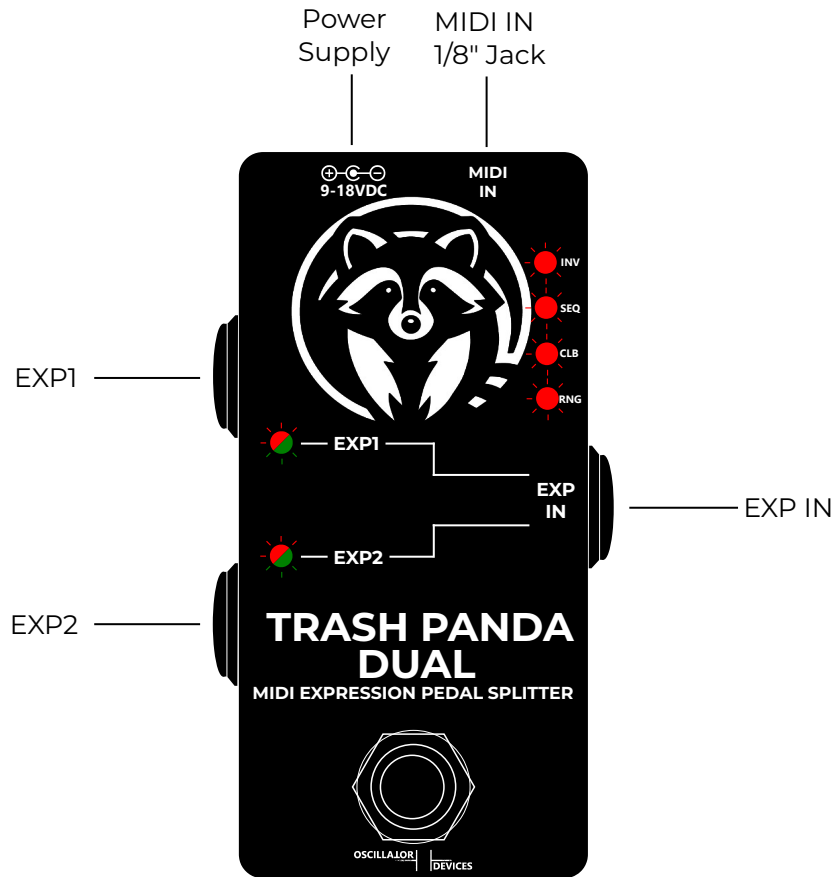


TRASH PANDA DUAL

User Manual

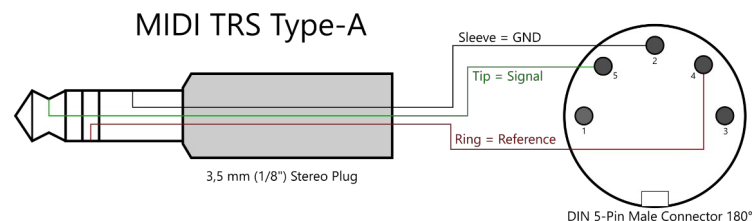
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The **Oscillator Devices Trash Panda Dual** is a MIDI controllable expression pedal splitter. Plug an expression pedal into the expression input and control up to two effects pedals with it. Either control one, or both pedals at the same time, invert the output or set a custom range. When using MIDI, every expression output can be controlled individually and the **Trash Panda Dual's** internal LFO can drive the expression outputs with 3 different waveforms, synced to MIDI clock.



Connections

- **EXP1/2:** Expression outputs. 1/4" stereo jack sockets wired like a standard expression pedal with a 50k potentiometer and thus will fit most common pedals. Every **EXP** has a corresponding dual color LED to represent the state of the expression output. It lights green in the heel position, shifts to orange in the middle position and gradually fades to red towards the toe position.
- **EXP IN:** The expression pedal input. Connect a standard expression pedal (resistance does not matter) here to directly control one or more of the expression outputs.
- **Power Supply:** 9-18V. 2.1mm barrel connector, center negative. This corresponds to the standard "Boss-Style" power supply. Current consumption maximum 100mA.
- **MIDI In:** 1/8" stereo jack sockets according to MIDI standard for MIDI TRS (**MIDI TRS-Type A**).



Please disconnect all devices from the power supply, before making any connections.

Caution: Under no circumstances should there be more than +5V or negative voltages be applied to any expression socket.

General Usage

Plug in your expression pedal into *EXP IN* and connect your guitar pedals equipped with expression inputs into *EXP1* and *EXP2* using **TRS** cables (TS won't work). When powering up, the signal of the expression pedal plugged into *EXP IN* will be routed to one of the *EXP1/2* outputs. Use the footswitch to toggle between *EXP1* and *EXP2* (see section Setting the Sequence to change that behavior). The output that is unused stays at the last value.

When moving the Expression pedal, the red LEDs will show the position. If not all LEDs are fully off, when at heel position, or not all LEDs are fully on at toe position, consider calibrating the expression pedal (see section Calibrating the Expression Pedal).

To select where the expression signal is routed just send the corresponding PC message.

PC	Function
n	Select expression out EXP1 = 0, EXP2 = 1, EXP1+EXP2 = 2, Disabled = 3

For more commands to extent the functionality see section MIDI Implementation.

Configuration

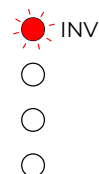
The Trash Panda Dual has a configuration mode, to set up various parameters. To get into configuration mode press and hold the footswitch for longer than 3s. The EXP1/2 LEDs will start flashing rapidly and so will one of the red LEDs.

The red LED shows which configuration mode is selected. Press the footswitch until the LED next to the desired configuration mode lights up. Press the footswitch four times to end the configuration mode.

Inverting the Outputs

Normally, the outputs are following the expression input. To invert that behavior, so heel on the expression pedal is toe on the output and toe on the expression pedal is heel on the output, select configuration *INV*.

1. Press and hold the footswitch for longer than 3s to get into configuration mode.
2. *INV* is already selected, since it's the first configuration mode. Press and hold the footswitch for longer than 1s to select it
3. Use the footswitch to scroll through every four combinations of Inverted vs. Not inverted, where a green LED is not inverted and a red LED is inverted.
4. Save the selection by pressing and holding the footswitch for longer than 1s.



Setting the Sequence

Normally, when pressing the footswitch, the *Trash Panda Dual* toggles between *EXP1* and *EXP2*. To also use both at the same time, or have the expression input disconnected, use the Sequence configuration.

1. Press and hold the footswitch for longer than 3s to get into configuration mode.
2. Press the footswitch once to select *SEQ*. Press and hold the footswitch for longer than 1s.
3. Use the footswitch to scroll through the following combinations, shown by the order the green LEDs light up.
 - EXP1 → EXP2
 - EXP1 → EXP2 → EXP1+EXP2
 - EXP1 → EXP2 → Disabled
 - EXP1 → EXP2 → EXP1+EXP2 → Disabled
4. Press and hold the footswitch to save the selection.



Calibrating the Expression Pedal

Some expression pedals don't cover the whole range. To be able to use the full range of the connected pedals, the expression pedal can be calibrated.

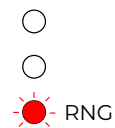
1. Press and hold the footswitch for longer than 3s to get into configuration mode.
2. Press the footswitch twice to select *CLB*. Press and hold the footswitch for longer than 1s.
3. Move the expression pedal all the way to heel and press the footswitch.
4. Move the expression pedal all the way to toe and press the footswitch.
5. Press and hold the footswitch to save the calibration data.



Setting the Range

Sometimes the whole range isn't useful or you want to use the expression pedal to select two distinct values. For that case the range of the expression outputs can be limited.

1. Press and hold the footswitch for longer than 3s to get into configuration mode.
2. Press the footswitch three times to select *RNG*. Press and hold the footswitch for longer than 1s.
3. Starting with *EXP1*. Move the expression pedal, so the desired minimum value is set. Press the footswitch.
4. Move the expression pedal, so the desired maximum value is set. Press the footswitch.
5. Repeat steps 3 and 4 for *EXP2*.



Control Voltage (CV)

The outputs of the *Trash Panda Dual* can be switched between Expression and +5V CV individually.

But what's the difference? An expression pedal is nothing else than a potentiometer. The pedal with the expression input delivers a voltage (+5V or +3.3V most of the time) on the ring of the TRS connector. The potentiometer divides this voltage down, depending on the state of the pedal. This lower voltage is then provided to the pedal on tip of the TRS connector. CV on the other hand provides this voltage on tip directly. It doesn't need a voltage provided by the input.

To switch one output to CV, open the backplate. You'll find two DIP switches next to the *EXP1/2* sockets. Turn them to *ON* for CV and *OFF* for regular expression. Please be aware that using a CV output with a device that is not fit for it, might damage it.

MIDI Implementation

Controlling the Expression Outputs

The expression outputs can be set when an expression pedal is plugged in. The MIDI message overwrites the expression pedal. When the expression pedal is moved, the MIDI command is overwritten.

The expression output has 256 steps. The first two commands (20/40 and 21/41) distributes the entire range over 128 steps. The high-resolution commands (22/42 and 23/43) can be used to set a precise value.

CC			Function
EXP1	EXP2	#	
20	40	0-127	Expression out from heel (0) to toe (127)
21	41	0-127	Expression out from toe (0) to heel (127)
22	42	0-127	Expression out from heel (0) to middle position (127)
23	43	0-127	Expression out from middle position (0) to toe (127)

To set both expression outputs to the same value at the same time, use the following command.

CC	#	Function
102	0-127	All Expression outs from heel (0) to toe (127)

Controlling Active Expression Outputs

To control which expression outputs are routed to the expression pedal, use the following commands. An active output is routed to the expression pedal, a deactivated output is not.

CC	#	Function
103	0-1	Activate EXP1 (0), EXP2 (1)
104	0-1	Deactivate EXP1 (0), EXP2 (1)

With the following command, the expression value of only the active expression outputs can be set.

CC	#	Function
105	0-127	Set expression value from all active expression outs from heel (0) to toe (127)

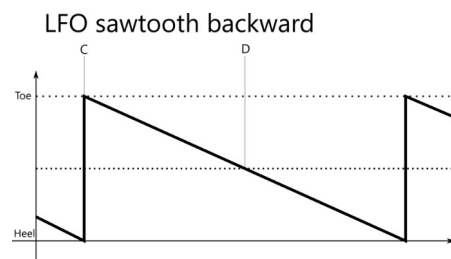
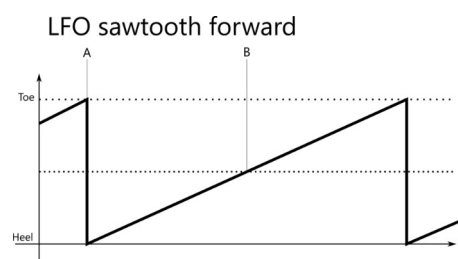
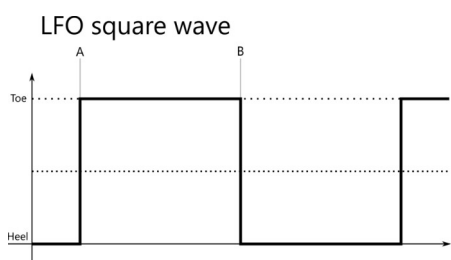
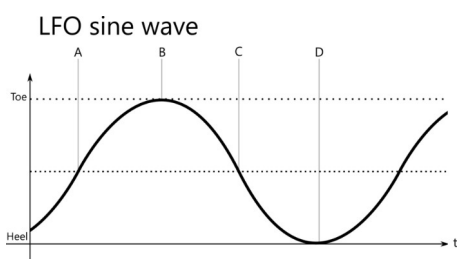
To save on MIDI commands there are commands to activate/deactivate all expression outputs at the same time.

CC	#	EXP1	EXP2
106	00	Deactivated	Deactivated
	01	Activated	Deactivated
	02	Deactivated	Activated
	03	Activated	Activated

LFO Waveforms

The *Trash Panda Dual* has an internal, MIDI clock synchronous, LFO engine with 3 waveforms to drive the expression outputs. These are the basic commands for selecting the waveform and starting point. Refer to the following sections on how to alter these commands to change speed and range.

CC			Function	#	Function
EXP1	EXP2	#			
30	50	0	Stop LFO	50	LFO square wave with starting point A
		1	Restart LFO	60	LFO square wave with starting point B
		10	LFO sine wave with starting point A	90	LFO sawtooth forward with starting point A
		20	LFO sine wave with starting point B	100	LFO sawtooth forward with starting point B
		30	LFO sine wave with starting point C	110	LFO sawtooth backward with starting point C
		40	LFO sine wave with starting point D	120	LFO sawtooth backward with starting point D



The LFO starts immediately at the specified starting point. Resending the commands will reset the engine to start over from the starting point.

LFO Speed

The speed of the LFO, relative to MIDI clock, can be increased or decreased. The commands above (CC30/50) perform one pass of the waveform per 1/4 note. The commands to change the speed are determined by adding to the basic command (CC30 10, CC 30 20 etc.).

- Basic Command: Normal speed
- Basic Command+1: Half speed
- Basic Command+2: Double speed
- Basic Command+3: Quarter speed
- Basic Command+4: Quadruple speed

For example:

CC			Function
EXP1	EXP2	#	
30	50	10	LFO sine wave with starting point A, speed normal (1/4 Note)
		11	LFO sine wave with starting point A, half speed (1/2 Note)
		12	LFO sine wave with starting point A, double speed (1/8 Note)
		13	LFO sine wave with starting point A, quarter speed (Whole Note)
		14	LFO sine wave with starting point A, quadruple speed (1/16 Note)

This procedure can be applied to all waveforms. E.g. rectangle with starting point B in 1/8 notes: CC 30 62

LFO Parameter (Range and Offset)

The waveforms set this way always run through the entire range from heel to toe. The range can be reduced and the center point moved. The waveforms are shifted in 13 steps, with step 6 being the waveform in the middle. This corresponds to the *Offset* in the graphic.

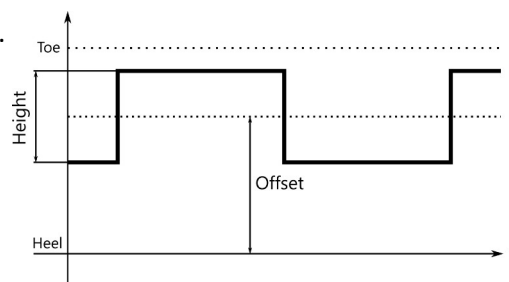
CC			Function
EXP1	EXP2	#	
31	51	00	Offset 0: The middle of the waveform is at heel
		60	Offset middle: The middle of the waveform is right between the heel and toe (default)
		120	Offset Max: The middle of the waveform is at Toe

All values in increments of 10 are valid.

In addition to the shift, the height of the waveforms can also be restricted.

This corresponds to *Height* in the graphic. As with command CC 30/50/70/90, this parameter is calculated by addition to the basic command.

- Basic Command: Normal Height
- Base Command+1: Half Height
- Base Command+2: Quarter Height
- Base Command+7: Height 1/128



For example:

CC			Function
EXP1	EXP2	#	
31	51	60	No constraint on height, waveform sweeps full range (default)
		61	Waveform height halved
		62	Waveform height 1/4
		63	Waveform height 1/8
		...	
		67	Waveform height 1/128

The *Offset* and *Height* settings persist across a new waveform. Reset with CC 31 60.

MIDI Channel

The **Trash Panda Dual** ships in omni mode (i.e. it responds to every channel). The MIDI channel can be set in two ways. With the footswitch, or with a MIDI command.

To change the MIDI channel using the footswitch, proceed as follows:

1. Disconnect the device from the power supply
2. Press and hold the footswitch and restore the power while the footswitch is pressed.
3. After the boot process is complete, the device starts to flash its LEDs. Press the footswitch according to the number of the desired channel (e.g. twice for channel 2). The **Trash Panda Dual** acknowledges this by emitting short flashing pulses corresponding to the number of the channel.
4. Once the desired channel is set, press the footswitch and hold it down. The LEDs stop flashing and eventually blink once more. The channel is saved.
5. Disconnect the supply voltage. On the next power up the **Trash Panda Dual** reacts to the selected channel.

To put the **Trash Panda Dual** in omni mode skip step 3.

To change the MIDI channel via MIDI command, the following two commands are sent directly one after the other.

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