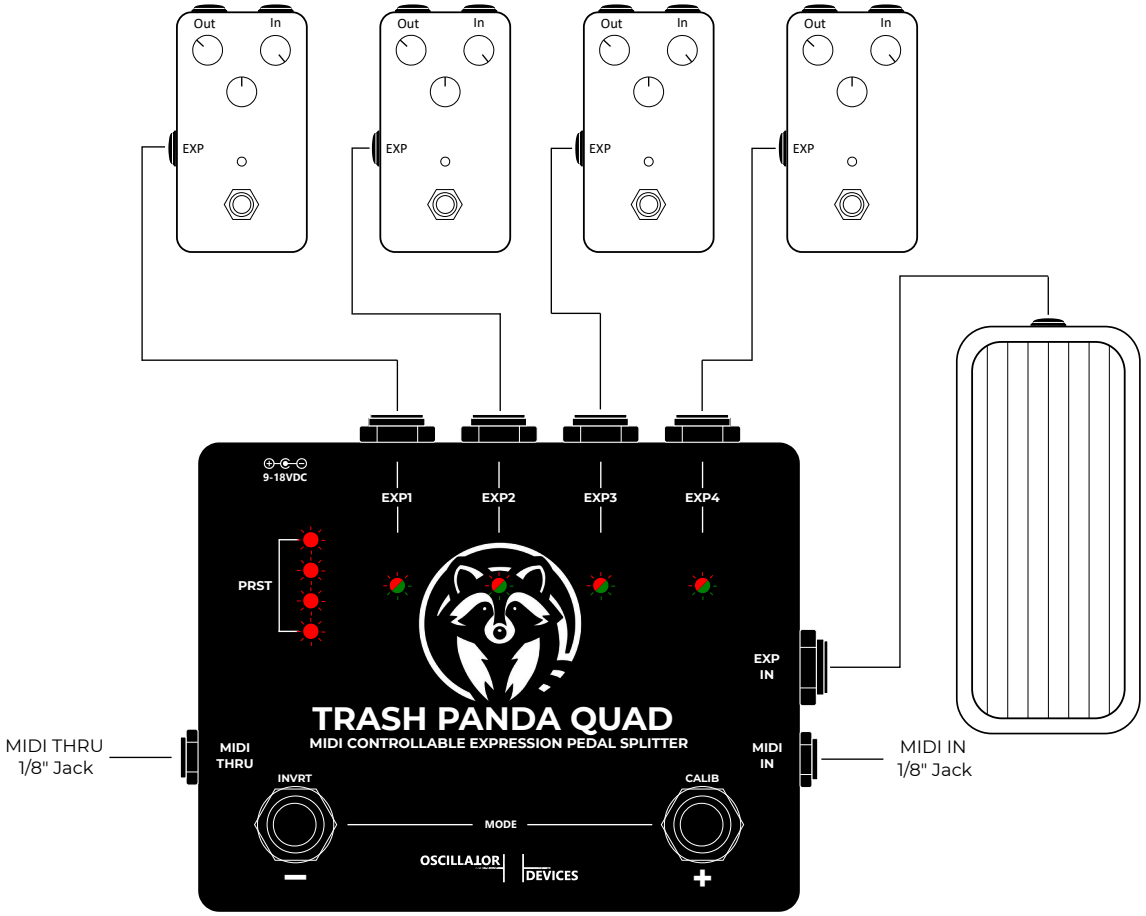
TRASH PANDA QUAD

User Manual

Connections....1
Modes....2
  Mode 1: Manual Mode....2
  Mode 2: Preset Mode....2
    Preset Save Procedure....3
    Deleting a Preset....3
  Mode 3: MIDI Mode....3
MIDI Implementation....4
  Controlling the Expression Outputs....4
  Setting the Taper and Range....4
  Saving the Taper and Range....4
  Switch Between Modes....5
  Controlling Active Expression Outputs....5
  Factory Reset....5
  LFO Waveforms....6
  MIDI Channel....6
Calibration Procedure....7
Control Voltage (CV)....7

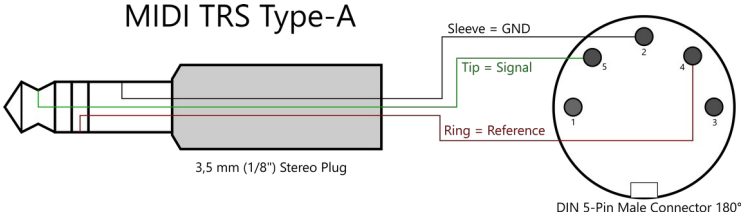
The ***Oscillator Devices Trash Panda*** is a MIDI controllable expression pedal splitter. Plug in your expression pedal and control up to four effects devices with expression pedal or CV inputs. All functions are MIDI-controllable, even the pedal position of the expression outputs. That also makes it a MIDI-to-expression translator/converter. The expression outputs can also be internally controlled by a LFO is either free running or syncs to MIDI clock.

The expression outputs retain their last position when switching to another output. Even when re-selecting an output, the value remains unchanged until the expression pedal is moved.



Connections

- **EXP1/2/3/4:** Expression outputs. 1/4'' TRS jack sockets wired like a standard expression pedal with a 50kΩ potentiometer. This value fits most 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. Maximum voltage on all expression outputs 5V.
- **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 180mA.
- **MIDI In/Thru**: 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.

Modes

The ***Trash Panda Quad*** has three modes. With an expression pedal plugged in, you can switch between ***Manual Mode*** and ***Preset Mode*** by pressing and holding both footswitches. By unplugging the expression pedal you automatically enter the ***MIDI Mode***. Regardless, MIDI commands can be sent in every mode.

Choose ***Manual Mode*** for quick and easy expression pedal splitting. ***Preset Mode*** gives you access to more than one expression output at a time. You can also save LFO settings to presets.

Mode 1: Manual Mode

When the preset LEDs show the position of the expression pedal, the ***Trash Panda Quad*** is in ***Manual Mode***.

In ***Manual Mode*** the expression pedal plugged into *EXP IN* is routed to one of the expression outputs (*EXP1/2/3/4*) at a time. The corresponding LED of the output that is connected to the expression pedal input will light up. The expression outputs that are not active will stay at the last position, until selected again. Every expression output can be inverted individually (Heel on the expression input is toe at the output and vice versa). If there is nothing plugged into an expression output, the output is skipped during selection.

Footswitch	Action	Function
+/CALIB Footswitch	Press	Selects the next used expression out to be active
	Hold 3s	Enters the calibration procedure (see section Calibration Procedure)
-/INVRT Footswitch	Press	Selects the previous used expression output to be active
	Hold 3s	Inverts the active expression out (This is saved permanently)

When in ***Manual Mode***, the active expression output can be selected via MIDI, too. Just send the corresponding PC message. (When the PC messages of your MIDI controller start at 0, subtract 1 → PC 0 = EXP1).

PC	Function
n	Select expression out n

For more commands to extent the functionality of the ***Manual Mode*** see section MIDI Implementation.

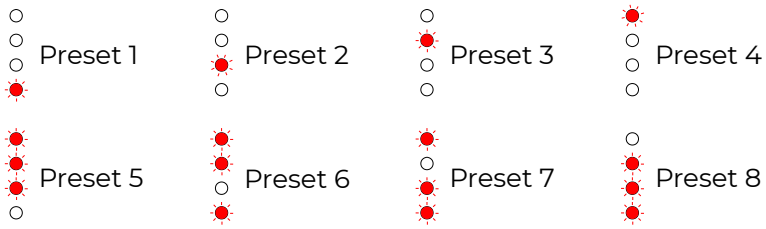
Mode 2: Preset Mode

When one or more of the preset LEDs light up independent from the position of the expression pedal, the ***Trash Panda Quad*** is in ***Preset Mode***.

In ***Preset Mode*** one or more expression outputs can be active at the same time and the taper can be set individually. Like in ***Manual Mode***, the corresponding LED of the outputs that are controlled by the expression pedal input will light up. The expression outputs that are not active will stay at the last position, until selected again.

Footswitch	Action	Function
+/CALIB Footswitch	Press	Selects the next occupied preset
	Hold 3s	Enters the calibration procedure (see section Calibration Procedure)
-/INVRT Footswitch	Press	Selects the previous occupied preset
	Hold 3s	Enters the preset save procedure (see section Preset Save Procedure)

There are 8 presets that correspond to the preset LEDs like the picture on the right.



When in ***Preset Mode***, the presets can be selected via MIDI, too. Just send the corresponding PC message (When the PC messages of your MIDI controller start at 0, subtract 1 → PC 0 = Preset 1).

PC	Function
n	Select preset n

For more commands to extent the functionality of the ***Preset Mode*** see section MIDI Implementation.

Preset Save Procedure

To save a new preset, proceed like this.

- While in Preset Mode, press and hold the left footswitch (**-/INVRT**) for 3s. The preset LEDs start flashing.
- Use the (**-/INVRT**) footswitch to select the preset you want to save. Press the (**+/CALIB**) footswitch when the LEDs corresponding to the preset you want to save blinks.
- The LED of ***EXP1*** starts flashing. Use the (**-/INVRT**) footswitch to choose if ***EXP1*** will be:
  - Active with normal direction (LED flashes green slowly)
  - Active with inverted direction (LED flashes red slowly)
  - Active with logarithmic taper (LED flashes green fast)
  - Active with reverse logarithmic taper (LED flashes red fast)
  - Inactive (LED is off)

  You can cycle through these five options as many times as you like.
- When the desired behavior is set, press the right footswitch (**+/CALIB**) to proceed to the next ***EXP***.
- When all four ***EXP*** are set the way you like it, press and hold the right footswitch (**+/CALIB**). The LEDs flash fast a few times. The preset is saved.

To cancel the Preset Save Procedure, press and hold the left footswitch (**-/INVRT**).

Deleting a Preset

To delete a preset, proceed like this.

- Enter Preset Save Procedure by pressing and holding the left footswitch (**-/INVRT**) for 3s. The preset LEDs start flashing.
- Use the (**-/INVRT**) footswitch to select the preset you want to delete.
- Press and hold both the (**+/CALIB**) and (**-/INVRT**) footswitch for 3s. The preset will be deleted.

To cancel the procedure, press and hold the left footswitch (**-/INVRT**).

Mode 3: MIDI Mode

When no expression pedal is connected to the expression input, the ***Trash Panda Quad*** is in ***MIDI Mode***. In MIDI mode all corresponding EXP LEDs are on and show the state of the expression outputs. The footswitches have no function.

MIDI Implementation

Controlling the Expression Outputs

The expression outputs have 256 steps. The first two commands (20/40/60/80 and 21/41/61/81) distribute the entire range over 128 steps. The high-resolution commands (22/42/62/82 and 23/43/63/83) are used to set a precise value.

CC					Function
EXP1	EXP2	EXP3	EXP4	#	
20	40	60	80	0-127	Expression out from heel (0) to toe (127)
21	41	61	81	0-127	Expression out from toe (0) to heel (127)
22	42	62	82	0-127	Expression out from heel (0) to middle position (127)
23	43	63	83	0-127	Expression out from middle position (0) to toe (127)

To set all four 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)

Setting the Taper and Range

Starting with version 1.3, the range and taper of the expression outputs can be set. It is recommended to use the WebMIDI Interface on the Oscillator Devices website to set these up.

To set the taper of an expression output use the following command. This setting is temporary and have to be saved with the Save Command. See section Saving the Taper and Range.

CC					Function
EXP1	EXP2	EXP3	EXP4	#	
24	44	64	84	0 1 2 3 4	Not Active (Preset Mode only) Normal Inverted Logarithmic Reverse Logarithmic

The range commands apply regardless of mode, but have different meanings. When setting the range in ***Manual Mode*** this range applies to all presets, too. When you want to use another range for a preset, you can override it by setting it while in ***Preset Mode***.

CC					Function
EXP1	EXP2	EXP3	EXP4	#	
25	45	65	85	0-127	Set the minimum of the expression out, which is reached when pedal is at heel
26	46	66	86	0-127	Set the maximum of the expression out, which is reached when pedal is at toe

The range setting is temporary and is reset when changing mode, or preset. To save these settings, see section Saving the Taper and Range.

Saving the Taper and Range

To save taper and range in ***Manual Mode***, three commands have to be sent directly after another without sending anything in between:

For EXP1: CC 09 18 + CC 09 52 + CC 09 04
For EXP2: CC 09 18 + CC 09 52 + CC 09 05
For EXP3: CC 09 18 + CC 09 52 + CC 09 06
For EXP4: CC 09 18 + CC 09 52 + CC 09 07

To save taper and range to a preset, four commands have to be sent directly after another without sending anything in between, while being in ***Preset Mode***:

CC **108** <prst> + CC 09 18 + CC 09 52 + CC 09 **02**

with <prst> being the number of the preset starting at zero (Preset 1 = 0). The same procedure is used to delete a preset, but with the first and last command being different:

CC **109** <prst> + CC 09 18 + CC 09 52 + CC 09 **03**

Switch Between Modes

To switch between ***Preset Mode*** and ***Manual Mode***, use the following command.

CC	#	Function
107	0-1	0 = Manual Mode, 1 = Preset Mode

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. Note that these are set back as soon as you select a new preset (***Preset Mode***), or select a different expression out (***Manual Mode***).

CC	#	Function
103	0-3	Activate EXP1 (0), EXP2 (1), EXP3 (2), or EXP3 (2)
104	0-3	Deactivate EXP1 (0), EXP2 (1), EXP3 (2), or EXP3 (2)

With the following command, the expression value of the active expression outs 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. Which one is selected is binary encoded. CC 106 00 is all off, CC 106 15 is all on, for example.

CC	#	EXP1	EXP2	EXP3	EXP4
106	00	Deactivated	Deactivated	Deactivated	Deactivated
	01	**Activated**	Deactivated	Deactivated	Deactivated
	02	Deactivated	**Activated**	Deactivated	Deactivated
	03	**Activated**	**Activated**	Deactivated	Deactivated
	04	Deactivated	Deactivated	**Activated**	Deactivated
	05	**Activated**	Deactivated	**Activated**	Deactivated
	06	Deactivated	**Activated**	**Activated**	Deactivated
	07	**Activated**	**Activated**	**Activated**	Deactivated
	08	Deactivated	Deactivated	Deactivated	**Activated**
	09	**Activated**	Deactivated	Deactivated	**Activated**
	10	Deactivated	**Activated**	Deactivated	**Activated**
	11	**Activated**	**Activated**	Deactivated	**Activated**
	12	Deactivated	Deactivated	**Activated**	**Activated**
	13	**Activated**	Deactivated	**Activated**	**Activated**
	14	Deactivated	**Activated**	**Activated**	**Activated**
	15	**Activated**	**Activated**	**Activated**	**Activated**

Factory Reset

To perform a factory reset, you have to send these four MIDI commands directly after another without sending anything in between:

CC 112 98 + CC 09 18 + CC 09 52 + CC 09 08

LFO Waveforms

The ***Trash Panda Quad*** has an internal LFO engine with 3 waveforms to drive the expression outputs. The LFO always moves between heel and toe, as set by the range command and uses the taper set by the taper command. Every waveform has its own command, with the argument setting the speed. Sending this command again, restarts the LFO.

CC					Function
EXP1	EXP2	EXP3	EXP4	#	
30 = Sine Wave 31 = Square Wave 32 = Sawtooth Forward 33 = Sawtooth Backward	50 = Sine Wave 51 = Square Wave 52 = Sawtooth Forward 53 = Sawtooth Backward	70 = Sine Wave 71 = Square Wave 72 = Sawtooth Forward 73 = Sawtooth Backward	90 = Sine Wave 91 = Square Wave 92 = Sawtooth Forward 93 = Sawtooth Backward	0	Stop LFO
				1	Start LFO synced to MIDI clock 1/4 notes
				2	Start LFO synced to MIDI clock 1/8 notes
				3	Start LFO synced to MIDI clock dotted 1/8 notes
				4	Start LFO synced to MIDI clock triplets
				5	Start LFO synced to MIDI clock 1/16 notes
				6	Start LFO synced to MIDI clock 1/2 notes
				7	Start LFO synced to MIDI clock whole notes
				10...127	Start LFO free running from 200ms to 3.2s in steps of 25ms

To shift the waveforms in relation to each other (called *phase*) or have a different starting point, use the following command right after the LFO command:

CC					Function
EXP1	EXP2	EXP3	EXP4	#	
34	54	74	94	0	0°
				2	45°
				4	90°
				6	135°
				8	180°
				10	225°
				12	270°
				14	315°

MIDI Channel

The ***Trash Panda Quad*** ships in omni mode (i.e. it responds to every channel). The MIDI channel can be set in two ways. With the **+/CALIB**-Footswitch, or with MIDI commands.

To change the MIDI channel using the **+/CALIB**-Footswitch, proceed as follows:

1. Disconnect the device from the power supply
2. Press and hold the **+/CALIB**-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 Quad*** 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 until all LEDs stop flashing.
5. Disconnect the supply voltage. The next time the ***Trash Panda Quad*** is started, it reacts to the selected MIDI channel.

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

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

CC 119 <ch> + CC 09 18 + CC 09 52 + CC 09 01

<ch> corresponds to the channel, use 0 for omni mode.

Calibration Procedure

The calibration procedure is a way to tell the ***Trash Panda Quad*** where is full heel position and full toe position.

Sometimes you may notice that a particular expression pedal doesn't reach full heel or full toe. You can see that by moving the expression pedal in ***Manual Mode***. The preset 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.

To calibrate a new expression pedal, proceed like this.

- In ***Preset Mode*** or ***Manual Mode*** press and hold the right footswitch (**+/CALIB**) for 3s. The ***EXP*** LEDs start flashing green and the preset LEDs show the position of the expression pedal before calibration.
- Move the expression pedal to heel position and press the right footswitch (**+/CALIB**) again. The ***EXP*** LEDs start flashing red.
- Move the expression pedal to toe position and press the right footswitch (**+/CALIB**) again. All LEDs flash fast a few times. The expression pedal heel and toe positions are saved.

To cancel the Calibration Procedure, press the left footswitch **(-/INVRT)**.

Control Voltage (CV)

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

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

Important: Only use TRS cables on the Trash Panda side. When CV is switched on, the ring carries +5V. If the other side has a TRS socket, where the ring is connected to GND or something else, you'll need a **floating ring cable**.