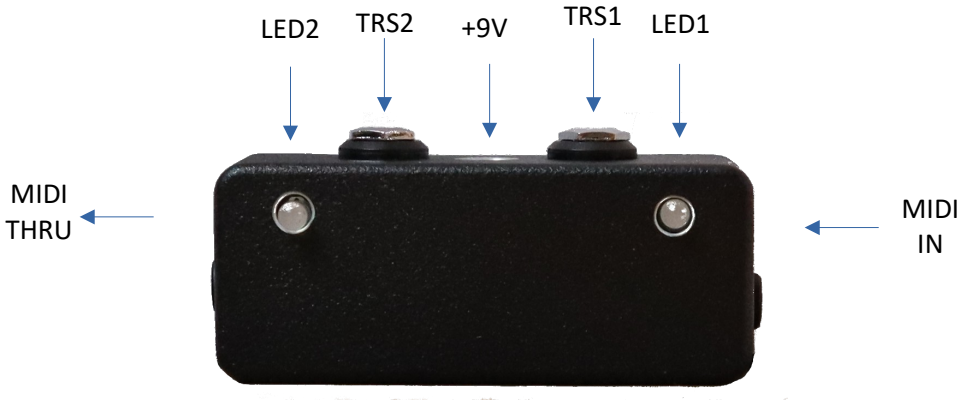
OSCILLATOR DEVICES

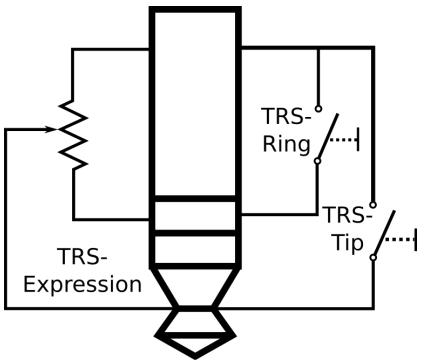
MIDI-Solutions and Custom FX

Garbage Collector 2.0

The ***Oscillator Devices Garbage Collector*** is a MIDI controllable expression pedal and footswitch in one. Effects devices with expression pedal inputs or inputs for external foot switches (e.g. tap tempo on guitar pedals) can be controlled automatically by the ***Garbage Collector*** via MIDI. The ***Garbage Collector*** can be synchronized with MIDI clock and thus synchronize time-based effects. It can emulate either a foot switch with *tip* and *ring* or an expression pedal at both outputs. The two sockets are insulated to avoid ground loops. The MIDI channel is adjustable and complex switching functions can be combined in presets.



- **TRS1/2:** Two isolated 1/4 '' stereo jack sockets. As switches, the *tip* and *ring* are open and close individually to the *sleeve*. As an expression out, the wisher is on the *tip* and connected to the *sleeve* and *ring* via the potentiometer. If the expression function is activated via MIDI command, the switch is automatically deactivated. If the switch is used, the expression function is automatically deactivated.
- **LED1/2**: Associated LEDs. With the switch function, the LEDs light up whenever the contact is closed. If the LED lights up green, the *tip* is connected to the *sleeve*, if it lights up red, the *ring* is connected to the *sleeve*. When using the expression function, the LED on the *heel* position lights up green, becomes darker towards the middle position and begins to light up red towards the *toe* position.



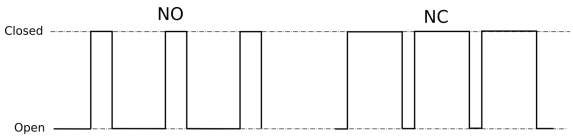
- **+9V:** Power supply 9-18V. 2.1mm barrel connector, center negative. This corresponds to the standard “Boss-Style” power supply. Current consumption maximum 100mA.
- **MIDI In/Thru**: The MIDI sockets are 1/8“ stereo jack sockets and are assigned according to **MIDI TRS-Type A**.

Signal	Funktion	MIDI TRS Type A	5-Pin DIN
MIDI Ref	Current Source	Ring	Pin 4
MIDI Sig	Current Sink	Tip	Pin 5
GND	Shield	Sleeve	Pin 2

Attention: Under no circumstances should more than + 5V be applied to the TRS sockets. This is especially true if the ***Garbage Collector*** is to be used as an amp switcher. At the sockets of amplifier switches, voltages significantly higher than + 5V, or even AC voltage, may be present. If an amp switcher is required, the ***Garbage Collector*** can be modified accordingly. Please contact us.

Most effects expect a switch that is open when idle and activated by a connection to the *sleeve*. But there are also manufacturers who, conversely, expect a closed switch for the idle state (e.g. Boss). In the case of commands that generate pulses, each command is therefore designed twice: ***NO*** (Normally Open) and ***NC*** (Normally Closed).

- **NO**: The impulse always ends openly. If the switch is closed at the beginning, it is only opened
- **NC**: The impulse always ends closed. If the switch is open at the beginning, it only closes.



General Switch Commands

CC 00 to CC 02 are commands that act on multiple switches at the same time

CC	#	TRS1-Tip	TRS1-Ring	TRS2-Tip	TRS2-Ring
00	00	Open	Open	Open	Open
00	01	**Closed**	Open	Open	Open
00	02	Open	**Closed**	Open	Open
00	03	**Closed**	**Closed**	Open	Open
00	04	Open	Open	**Closed**	Open
00	05	**Closed**	Open	**Closed**	Open
00	06	Open	**Closed**	**Closed**	Open
00	07	**Closed**	**Closed**	**Closed**	Open
00	08	Open	Open	Open	**Closed**
00	09	**Closed**	Open	Open	**Closed**
00	10	Open	**Closed**	Open	**Closed**
00	11	**Closed**	**Closed**	Open	**Closed**
00	12	Open	Open	**Closed**	**Closed**
00	13	**Closed**	Open	**Closed**	**Closed**
00	14	Open	**Closed**	**Closed**	**Closed**
00	15	**Closed**	**Closed**	**Closed**	**Closed**

CC	#	TRS1-Tip	TRS1-Ring
01	00	Open	Open
01	01	**Closed**	Open
01	02	Open	**Closed**
01	03	**Closed**	**Closed**
01	04	**Pulse NO**	**Pulse NO**
01	05	**Pulse NC**	**Pulse NC**

CC	#	TRS2-Tip	TRS2-Ring
02	00	Open	Open
02	01	**Closed**	Open
02	02	Open	**Closed**
02	03	**Closed**	**Closed**
02	04	**Pulse NO**	**Pulse NO**
02	05	**Pulse NC**	**Pulse NC**

Line-specific Switch Commands

CC 10 (TRS1-Tip), CC 20 (TRS1-Ring), CC30 (TRS2-Tip), CC 40 (TRS2-Ring) only act on one switch at a time.

CC				Function					
TRS1-Tip	TRS1-Ring	TRS2-Tip	TRS2-Ring	#	Basic functions and NO	#	NC	#	Toggle
10	**20**	**30**	**40**	00	**Set „Open“**				
				01	**Set „Closed“**				
				02	Single Pulse NO				
				03	Single Pulse NC				
				10	Pulse NO MIDI clock 1/4	30	Pulse NC MIDI clock 1/4	50	Toggle MIDI clock 1/4
				11	Pulse NO MIDI clock 1/8	31	Pulse NC MIDI clock 1/8	51	Toggle MIDI clock 1/8
				12	Pulse NO MIDI clock triplets	32	Pulse NC MIDI clock triplets	52	Toggle MIDI clock triplets
				13	Pulse NO MIDI clock 1/16	33	Pulse NC MIDI clock 1/16	53	Toggle MIDI clock 1/16
				14	Pulse NO MIDI clock dotted 1/8	34	Pulse NC MIDI clock dotted 1/8	54	Toggle MIDI clock dotted 1/8
				15	Pulse NO MIDI clock 1/32	35	Pulse NC MIDI clock 1/32	55	Toggle MIDI clock 1/32
				16	Pulse NO MIDI clock 1/2	36	Pulse NC MIDI clock 1/2	56	Toggle MIDI clock 1/2
				17	Pulse NO MIDI clk every whole note	37	Pulse NC MIDI clk every whole note	57	Toggle MIDI clock every whole note
				18	Pulse NO MIDI clk every 2nd whole n.	38	Pulse NC MIDI clk every 2nd whole n.	58	Toggle MIDI clock every 2nd note
				19	Pulse NO MIDI clk every 3rd whole n.	39	Pulse NC MIDI clk every 3rd whole n.	59	Toggle MIDI clock every 3rd note
				20	Pulse NO MIDI clk every 4th whole n.	40	Pulse NC MIDI clk every 4th whole n.	60	Toggle MIDI clock every 4th note
				21	Pulse NO MIDI clk every 5th whole n.	41	Pulse NC MIDI clk every 5th whole n.	61	Toggle MIDI clock every 5th note
				22	Pulse NO MIDI clk every 6th whole n.	42	Pulse NC MIDI clk every 6th whole n.	62	Toggle MIDI clock every 6th note
				23	Pulse NO MIDI clk every 7th whole n.	43	Pulse NC MIDI clk every 7th whole n.	63	Toggle MIDI clock every 7th note
				24	Pulse NO MIDI clk every 8th whole n.	44	Pulse NC MIDI clk every 8th whole n.	64	Toggle MIDI clock every 8th note

It is also possible to send a certain number of pulses, e.g. to select a preset. This is also possible as *NO* and *NC*.

CC					Function
TRS1-Tip	TRS1-Ring	TRS2-Tip	TRS2-Ring	#	
11	21	31	41	0	1 Pulse NO
				1	2 Pulses NO
				2	3 Pulses NO
				n	n+1 Pulses NO
				126	127 Pulses NO
				127	128 Pulses NO

CC					Function
TRS1-Tip	TRS1-Ring	TRS2-Tip	TRS2-Ring	#	
12	22	32	42	0	1 Pulse NC
				1	2 Pulses NC
				2	3 Pulses NC
				n	n+1 Pulses NC
				126	127 Pulses NC
				127	128 Pulses NC

Some Tap Tempo effects are sensitive when the Tap Tempo Pulse is sent continuously. Therefore, there is the option of only stopping the beat for a limited number of times until the effect has recognized the beat. This is also possible as *NO* and *NC*.

CC					Function
T1-Tip	T1-Ring	T2-Tip	T2-Ring	#	
13	23	33	43	0-19	1-20 pulses NO MIDI clock 1/4
				20-39	1-20 pulses NO MIDI clock 1/8
				40-59	1-20 pulse NO MIDI clock triplets
				60-79	1-20 pulses NO MIDI clock 1/16
				80-99	1-20 pulses NO MIDI clock dot. 1/8
				100-119	1-20 pulses NO MIDI clock 1/32

CC					Function
T1-Tip	T1-Ring	T2-Tip	T2-Ring	#	
14	24	34	44	0-19	1-20 pulses NC MIDI clock 1/4
				20-39	1-20 pulses NC MIDI clock 1/8
				40-59	1-20 pulses NC MIDI clock triplets
				60-79	1-20 pulses NC MIDI clock 1/16
				80-99	1-20 pulses NC MIDI clock dot. 1/8
				100-119	1-20 pulses NC MIDI clock 1/32

The standard length of a pulse is approx. 80 ms. This can be too short for some devices. Therefore the pulse length can be set in 10ms steps.

CC					Function
TRS1-Tip	TRS1-Ring	TRS2-Tip	TRS2-Ring	#	
15	25	35	45	n	Pulse length in 10ms steps

Expression Commands

The following commands apply to the use of TRS1/2 as expression out. Switching between the switch and expressionis automatic. The expression out has 256 steps. Command 16/36 distributes the entire area over 128 steps. The high-resolution commands 17/37 and 18/38 can be used to set an exact value.

CC			Function
TRS1 (EXP1)	TRS2 (EXP2)	#	
16	36	0-127	Expression out from heel (0) to Toe (127)
17	37	0-127	Expression out from heel (0) to middle position (127)
18	38	0-127	Expression out from middle position (0) to toe (127)

Presets

It is possible to save 16 configurations and call them up with Program Change (PC) commands. The last command that was called is saved for each channel. The exception is the pulse width, which is also always saved. With the command CC 03, TRS1 and TRS2 are saved together; with the commands 04 and 05, TRS1 and TRS2 can be saved separately. The TRS that has not been saved in each case remains unchanged when the preset is called up. A preset can be deleted again with CC 06

CC		Function
03	0-15	Save the last command from TRS1 and TRS2 to memory location 0-15
04	0-15	Save the last command from TRS1 to memory location 0-15
05	0-15	Save the last command from TRS2 to memory location 0-15
06	0-15	Deleting the preset on memory location 0-15

To recall the saved presets, the corresponding number is sent as a Program Change (PC).

ATTENTION: Preset 0 is the startup state that is called when the device is switched on.

MIDI Channel

The ***Garbage Collector's*** MIDI channel can be set in two ways. With a MIDI command or a switch inside the housing.

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

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

To change the MIDI channel using the built-in switch, follow the steps below

1. Disconnect the device from the power supply
2. Remove the bottom plate. To do this, remove the 4 screws.
3. There is a button inside. Carefully press this button and restore the power supply while it is pressed. Be careful not to touch the electronics.
4. After the boot process is complete, the device starts to flash (LED1 green). Press the button according to the number of the desired channel (e.g. twice for channel 2). The ***Garbage Collector*** acknowledges this by emitting short flashing pulses corresponding to the number of the channel.
5. Once the desired channel is set, press the button and hold it down until the ***Garbage Collector*** switches off entirely.
6. Disconnect the supply voltage and mount the bottom plate. The next time it is started, the ***Garbage Collector*** reacts to the selected MIDI channel.

To put the ***Garbage Collector*** in omni mode (i.e. it responds to every channel) skip step 4.

Applications

DigiTech FS 3X: To emulate a DigiTech FS 3X switch, the following commands are sent (for TRS1)

Function FS 3X	Function TRS	CC commands	Description
Mode	Tip to GND	CC 10 02	A single pulse on the tip emulates a non-latching button press on Mode
Down	Ring to GND	CC 20 02	A single pulse on the ring emulates a non-latching button press on Down
Up	Tip and ring to GND	CC 10 02 + CC 20 02	Individual pulses at the tip and ring emulate non-latching button presses on Up

DOD Rubberneck: The foot switch input of the Rubberneck is matched to the above FS 3X switch. The following options

Function	Function FS 3X	CC commands	Description
Modulation on/off	Press button down	CC 20 02	A single pulse on the ring toggles the modulation
Rubbernecking	Press and Hold button up	CC 10 01 activate, CC 10 00 deactivate	Closed state activates rubbernecking, Open state deactivates
Tap tempo	Tap button up	CC 10 02 + CC 20 02 or CC 01 04	Single pulse activates Tap Tempo
Tap tempo with MIDI clock	Tap button up	CC 10 10 + CC 20 10	A pulse on tip and ring is triggered every ¼ note MIDI clock

Strymon El Capistan: The EXP socket can either be used to call up the favorite setting or to set the tempo. (Requires different configuration of the El Capistan)

Function El Capistan	Function TRS	CC commands	Description
Call up favorite	Tip closed	CC 10 01	A closed line on the tip calls up the favorites setting
Call up live mode	Tip open	CC 10 00	An open line at the tip changes back to live mode
Control tempo	Expression out	CC 16 00...CC 16 127	Expression out controls the tempo. The El Capistan must be configured for this

Walrus Monument Tremolo: Depending on the jumper setting of the Monument, tap tempo manually, via MIDI clock, or expression out

Funktion Monument	Funktion TRS	CC Kommandos	Beschreibung
Tap tempo	Pulse NO at tip	CC 10 02	Repeating pulses on the tip synchronize with the tap tempo
Tap tempo with MIDI clock	Pulse NO at tip with MIDI Clock 1/4	CC 10 10	Repeating pulses in time with MIDI Clock ¼ synchronize to the tap tempo
Tremolo speed	Expression out	CC 16 00 … CC 16 127	Tremolo speed starting at slowest (CC 16 00) ending with fastes (CC 16 127)