

MIDI-Solutions and Custom FX

The devices of the **Goblin** family have three ports. These ports can take on different roles and therefore also have a different MIDI command set. The roles in a nutshell:

- **Relay:** A relay which replaces a 3PDT true bypass switch (*Goblin-3PDT* only)
- **Switch:** A SPST soft switch, which is controlled by the *Goblin*
- **Tap Tempo:** Tap tempo or toggle switches, without a fixed on or off state
- **TRS:** A socket for an external switch, controlled by the *Goblin*
- **Encoder:** An encoder wheel to select presets (e.g. EHX POG2, or Cathedral)
- **Expression:** A digital potentiometer to control expression/CV inputs. (*Goblin-EXP* only)

Port as Relay, Switch or Tap Tempo

It is possible to switch all three ports to a defined state at the same time. If one or more ports are not relays or switches, they are ignored.

CC	#	Port1 (Role Switch or Relay only)	Port 2 (Role Switch or Relay only)	Port3 (Role Switch or Relay only)
00	00	Off	Off	Off
	01	On	Off	Off
	02	Off	On	Off
	03	On	On	Off
	04	Off	Off	On
	05	On	Off	On
	06	Off	On	On
	07	On	On	On

In addition, the ports can be controlled individually. The command "Hold", or MIDI clock synchronous commands, are interrupted by pressing the switch.

CC Port1	CC Port2	CC Port3	#	Function	#	Function
10	30	50	00	Port off (only Relay and Switch)	15	Toggle to the beat of the MIDI clock in 1/32 notes
			01	Port on (only Relay and Switch)	16	Toggle to the beat of the MIDI clock in 1/2 notes
			02	Port toggle (On to off or off to on)	17	Toggle to the beat of the MIDI clock in whole notes
			03	Port hold (Corresponds to a pressed and held switch, not Relay)	18	Toggle to the beat of the MIDI clock every 2nd whole note
			04	Port release (Release held switch, not Relay)	19	Toggle to the beat of the MIDI clock every 3rd whole note
			10	Toggle to the beat of the MIDI clock in 1/4 notes	20	Toggle to the beat of the MIDI clock every 4th whole note
			11	Toggle to the beat of the MIDI clock in 1/8 notes	21	Toggle to the beat of the MIDI clock every 5th whole note
			12	Toggle to the beat of the MIDI clock in triplet notes	22	Toggle to the beat of the MIDI clock every 6th whole note
			13	Toggle to the beat of the MIDI clock in 1/16 notes	23	Toggle to the beat of the MIDI clock every 7th whole note
			14	Toggle to the beat of the MIDI clock in dotted 1/8 notes	24	Toggle to the beat of the MIDI clock every 8th whole note

Some effects devices react strangely when a tap tempo signal is constantly being sent. There is the possibility to only give a limited number of impulses. Enough for the effect to take over the beat. With these commands, an automatic MIDI clock detection is carried out. If the MIDI clock changes by more than approx. 1%, the pulses are sent again. The sensitivity of the MIDI clock detection can be configured (see installation manual).

CC Port1	CC Port2	CC Port3	#	Function	#	Function
11	31	51	0-19	1-20 times toggle to the beat of the MIDI clock in 1/4 notes	100-104	1-5 times toggle to the beat of MIDI clock 1/2 notes
			20-39	1-20 times toggle to the beat of the MIDI clock in 1/8 notes	105-109	1-5 times toggle to the beat of the MIDI clock every whole n.
			40-59	1-20 times toggle to the beat of the MIDI clock in triplet notes	110-114	1-5 times toggle to the beat of MIDI clock every 2nd whole n.
			60-79	1-20 times toggle to the beat of the MIDI clock in 1/16 notes	115-119	1-5 times toggle to the beat of MIDI clock every 4th whole n.
			80-99	1-20 times toggle to the beat of the MIDI clock in dot. 1/8th n.	120-124	1-5 times toggle to the beat of MIDI clock every 8th whole n.

Port as TRS

If the port is in the role of an external switch (TRS, EXT, CTL etc.), this port then has two lines, referred to as "Tip" and "Ring", which emulates a plugged in external switch. This switch can be *Normally Open (NO)* or *Normally Closed (NC)*, which is set during configuration.

Line-specific Commands

Each line has a set of identical commands.

CC Tip	CC Ring	#	Function	#	Function
Port1: 10 Port2: 30 Port3: 50	Port1: 20 Port2: 40 Port3: 60	00	Set „Open“		
		01	Set „Closed“		
		02	Single pulse		
		03	Toggle		
		10	Pulse MIDI clock 1/4	30	Toggle MIDI clock 1/4
		11	Pulse MIDI clock 1/8	31	Toggle MIDI clock 1/8
		12	Pulse MIDI clock triplets	32	Toggle MIDI clock triplets
		13	Pulse MIDI clock 1/16	33	Toggle MIDI clock 1/16
		14	Pulse MIDI clock dotted 1/8	34	Toggle MIDI clock dotted 1/8
		15	Pulse MIDI clock 1/32	35	Toggle MIDI clock 1/32
		16	Pulse MIDI clock 1/2	36	Toggle MIDI clock 1/2
		17	Pulse MIDI clk every whole note	37	Toggle MIDI clock every whole note
		18	Pulse MIDI clk every 2nd whole n.	38	Toggle MIDI clock every 2nd note
		19	Pulse MIDI clk every 3rd whole n.	39	Toggle MIDI clock every 3rd note
		20	Pulse MIDI clk every 4th whole n.	40	Toggle MIDI clock every 4th note
		21	Pulse MIDI clk every 5th whole n.	41	Toggle MIDI clock every 5th note
		22	Pulse MIDI clk every 6th whole n.	42	Toggle MIDI clock every 6th note
		23	Pulse MIDI clk every 7th whole n.	43	Toggle MIDI clock every 7th note
		24	Pulse MIDI clk every 8th whole n.	44	Toggle MIDI clock every 8th note

Pulse

It is also possible to send a certain number of pulses, e.g. to select a preset.

CC-Tip	CC-Ring	#	Function
Port1: 11 Port2: 31 Port3: 51	Port1: 21 Port2: 41 Port3: 61	0	1 pulse
		1	2 pulses
		2	3 pulses
		n	n+1 pulses
		126	127 pulses
		127	128 pulses

MIDI Clock Pulse

Some Tap Tempo effects react strangely when the Tap Tempo Pulse is sent continuously. Therefore, there is the possibility to only send a limited number of pulses until the effect has caught on. With these commands, an automatic MIDI clock detection is carried out. If the MIDI clock changes by more than approx. 1%, the pulses are sent again. The sensitivity of the MIDI clock detection can be configured (see installation manual).

CC-Tip	CC-Ring	#	Function	#	Function
Port1: 12 Port2: 32 Port3: 52	Port1: 22 Port2: 42 Port3: 62	0-19	1-20 pulses MIDI clock 1/4 notes	100-104	1-5 pulses MIDI clock 1/2 notes
		20-39	1-20 pulses MIDI clock 1/8 notes	105-109	1-5 pulses MIDI clock every whole note
		40-59	1-20 pulses MIDI clock triplet notes	110-114	1-5 pulses MIDI clock every 2nd whole note
		60-79	1-20 pulses MIDI clock 1/16 notes	115-119	1-5 pulses MIDI clock every 4th whole note
		80-99	1-20 pulses MIDI clock dotted 1/8 notes	120-124	1-5 pulses MIDI clock every 8th whole note

Pulse Length

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

CC-Tip	CC-Ring	#	Function
Port1: 15 Port2: 35 Port3: 55	Port1: 25 Port2: 45 Port3: 65	n	Puls length in 10ms steps

Port as Encoder

Only Port 2 can act as Encoder.

CC	Function	
30	0	Preset decrement
	1	Preset increment

To select a certain preset, the PC command is used.

PC	Function
0	Leave preset mode
1...n	Select preset n

Port as Expression

Only Port 3 of the *Goblin-EXP* can act as Expression.

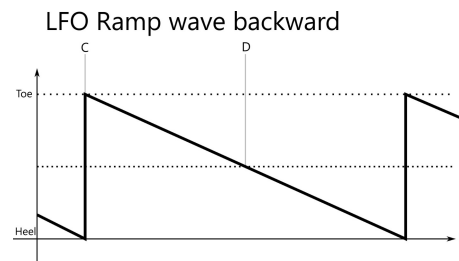
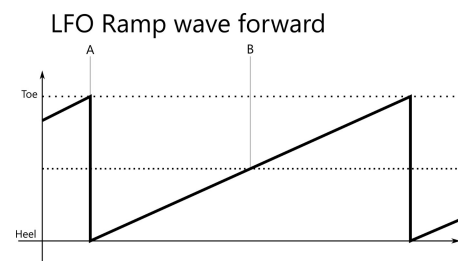
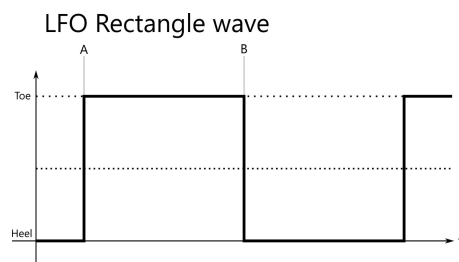
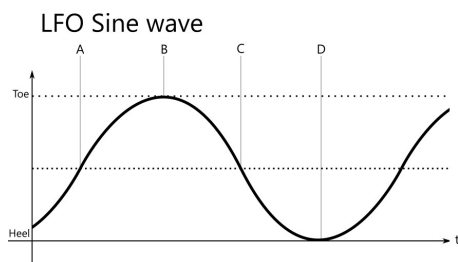
CC	#	Function
50	0...127	Expression out from heel (0) to toe (127)
51	0...127	Expression out from toe (0) to heel (127)
52	0...127	Expression out from heel (0) to middle position (127)
53	0...127	Expression out from middle position (0) to toe (127)

LFO-Waveforms

In addition, the *Goblin-EXP* has an internal, MIDI clock synchronous, LFO engine with 3 waveforms to drive the Expression/CV.

CC	#	Function
60	0	Stop LFO
	1	Restart LFO
	10	LFO sine wave with starting point A
	20	LFO sine wave with starting point B
	30	LFO sine wave with starting point C
	40	LFO sine wave with starting point D

CC	#	Function
60	50	LFO rectangle wave with starting point A
	60	LFO rectangle wave with starting point B
	90	LFO ramp forward with starting point A
	100	LFO ramp forward with starting point B
	110	LFO ramp backward with starting point C
	120	LFO ramp backward with starting point D



The LFO starts immediately at the specified start 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 perform one pass of the waveform per 1/4 note. The commands to change the speed are determined by adding to the basic command (CC 60 10, CC 60 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
60	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 (Ganze Note)
	14	LFO sine wave with starting point A, quadruple speed (1/16 Note)

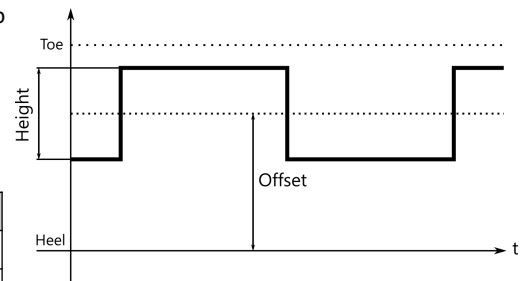
This procedure can be applied to all waveforms and starting points. E.g. rectangle with starting point B in 1/8 notes: CC 60 62.

LFO-Parameter

The waveforms set this way always run through the entire range, from heel to toe. The range can be reduced and moved.

The waveforms are shifted in 13 steps, with step 6 being the the waveform in the middle. This corresponds to the *Offset* in the graphic.

CC	#	Funktion
61	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.

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

For example:

CC	#	Funktion
61	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 are global, so they persist across a new waveform. Reset with CC 61 60.

MIDI Channel

The **Goblin**'s MIDI channel is adjustable. To change the MIDI channel, proceed as follows

1. Disconnect the device from the power supply
2. Press the button of the configuration port (normally port 1) and restore the power supply while it is pressed. The device starts to flash its LED after the startup delay has elapsed.
3. Press the button according to the number of the desired channel (e.g. twice for channel 2). The **Goblin** acknowledges this by emitting short flashing impulses according to the number of the channel.
4. Once the desired channel is set, press the button and hold it down until the **Goblin** switches off completely.
5. Disconnect supply voltage. The next time the **Goblin** is started, it reacts to the selected MIDI channel.

To put the **Goblin** in omni mode (i.e. it responds to every channel) skip step 3.

If the configuration port is a tap tempo port, the setting must be made „blindly“.

The MIDI channel can also be set using a MIDI command. See the Configuration section in the installation instructions.