Speak & Glitch GND-1T midi reference

(Rev 1.06, Jan. 20, 2025)

Table 1 MIDI CC functions

CC	Function	Range	Comments
0	Bank select	0-9	
2	Breath control	0-127	
3	Plasma	0-127	Modifies the effect of Gravity
4	DRIFT depth	0-127	* N.B. GLOBAL not patch specific *
5	Portamento	0-127	
6	NRPN data MSB		
7	POST FILTER Volume (sets synth volume)	0-127	Synth & AUX are always routed through Post Filter, drum and USB PF sends are optional
9	Amplitude ADSR depth	0-127	Mixer between rectangular and ENV
10	Expanded XP param select Use instead of CC11 for parameters not accessed via MIDI CC 0-127	0-15	See table 5
11	Expression param select	0-127	MIDI CC of any continuous parameter in this list. If omitted, the last edited parameter is used. Altering or selecting any parameter sets it as the current one being mapped
12	Expression controller Select	0-4	0=modheel 1=velocity 2=breath 3=aftertouch 4=XPLFO
13	Expression scaler value	0-127 bipolar	0=max neg, 64=0, 127 = max pos
14	Attack	0-127	
15	Hold	0-127	
16	Decay	0-127	
17	Sustain	0-127	
18	Release	0-127	
19	Tempo (speech rate)	0-127	

20	LFO1 rate	0-127	
21	LFO2 rate	0-127	
22	Attack/Decay mod	0-127	Uses Pitch mod mix waveform
23	Cross mod LFO1+2+SLFO	0-127	
24	SLFO Slow LFO rate	0-127	
25	CLFO Chaos LFO rate	0-127	
26	XPLFO mix	0-127	
27	XPLFO mod wav1	0-nummodwav	
28	Osc Waveshape	0 – 80	16 steps cross fading between consecutive wavs vox, saw, sqr, pnz, pwm, sqr-oct (table 3)
29	Osc Brightness	0-127	
30	Brightness mod Dep	0-127	Additive with folding
31	Brightness mod Mix	0-127	From Filter mod block
32	LFO 1+2 mod depth	0-127	Uses BENDS mix waveform
33	Pitch	0-117	MIDI note values
34	Pitch mod depth	0-127	Additive
35	Pitch mod mix	0-127	
36	Pitch mod wav1	0-nummodwav	See Table 2 for revised numbering
37	Pitch mod wav2	0-nummodwav	See Table 2
38	NRPN DATA LSB		
39	Plasma bend mod depth	0-127	Additive
40	Filter	0-127	(see also CC 73)
41	Filter mod depth	0-127	Additive with folding
42	Filter mod mix	0-127	
43	Filter mod wav1	0-nummodwav	See Table 2
44	Filter mod wav2	0-nummodwav	See Table 2
45	Speech ROM “loop blur”	0-127	0=no effect,127=max blur
46	Loop length	0-127	
47	LP leng mod depth	0-127	Multiplicative or/ Addditive
48	LP leng mod mix	0-127	
49	Lp leng mod wav1	0-nummodwav	See Table 2
50	Lp leng mod wav2	0-nummodwav	See Table 2
51	Echo Delay Time	0-127	
52	Glitch	0-127	
53	Glitch bend mod depth	0-127	Additive with folding
54	Gravity	0-127	
55	Gravity bend mod depth	0-127	Additive with folding
56	Flux	0-127	
57	Flux bend mod depth	0-127	Additive with folding
58	Warp	0-127	
59	Drums Overdrive	0-127	*** new in firmware 241103 (was Warp Bend previously)
60	Bend mod mix	0-127	
61	Bend mod wav1	0-nummodwav	See Table 2
62	Bend mod wav2	0-nummodwav	See Table 2
63	Unvoiced Speech Energy	0-127	0 = unvoiced signals off

	Reduction		127 = unmodified speech levels
64	Freeze & Looper Control *in looper mode, set up Echo vol and delay time first. Recommend setting Global Drums and RUN off while creating loops from multiple patches	0/127, and 1-8	127 = punch in if echoFreeze ON 0 = punch out if echoFreeze ON 1= LPfreeze off, 2= LPfreeze on 3=modFreeze off, 4=modFreeze on 5=echoFreeze off, 6=echoFreeze on 7=punch mode overwrite 8=punch mode dub
65	PStereo (phase)	0-127	
66	FStereo (filter)	0-127	
67	BStereo (bend)	0-127	
68	BStereo Mod (bendmod)	0-127	Multiplicative
69	Drum src mix	0-127	0 = speech ROM updates 127= synth audio
70	Drum volume	0-127	
71	Drum vel out variation	0-127	
72	DRUM MUTE	0-1	0 = drums on (mute off) 1 = drums off * See also CC 102
73	Filter DeResonance	0-127	Lowers speech filter resonances At max, filter-allpass
74	Drum trigger sensitivity	0-127	
75	Drum trig sens mod	0-127	Additive
76	Drum trig sens mod mix	0-127	
77	Drum rate	0-127	
78	Drum rate mod	0-127	Additive
79	Drum pattern	0-127	
80	Drum pattern mod	0-127	Additive with folding
81	Drum rate+pat mod mix	0-127	
82	Drum mod wav1	0-nummodwavs	Table 2
83	Drum mod wav2	0-nummodwavs	Table 2
84	Drum improv/rand	0-127	Randomizes timing
85	Drum map mod depth	0-127	
86	XPLFO mod wav2	0-nummodwav	
87	XPlfoScaler	0-127	
88	Tune	0-127	
89	Post Filter mod wav1	0-nummodwav	
90	Post Filter mod wav2	0-nummodwav	
91	Echo Repeats	0-127	
92	Post Filter cutoff	0-127	
93	Post Filter mod depth	0-127	
94	Post Filter resonance/Q	0-127	
95	Post Filter mod mix	0-127	
96	Xpression Freeze Thresh	0-127	
97	Post Filter Overdrive	0-127	

98	NRPN param low byte		
99	NRPN param high byte		
100	Osc Drive (pre filter)	0-127	64=unity gain re speech ROM data
101	Tempo mod	0 -127	uses LPleng mod mix signal
102	RUN / STOP	0= STOP 1 or 127 = RUN 2 = D-RUN off 3 = D-RUN on* 4 = STOP ALL audio with fades 5 = PANIC STOP	*D RUN (run drums only) is only effective when in STOP state. MIDI notes can be played while this is active. In STOP, activating D RUN turns off drumMute. Stop all audio immediately, Clear all MIDI notes
103	DRIFT control	0=off, 1/127=on, 2 =clear, 3= load temp 4= save temp 5= load perm 6= save perm 7= delete perm	0 halt drift, retain current values 2 clear drift buffer 3 load-from / 4 save-to temp drift buffer 5 load / 6 save / 7 delete, current permanent buffer (select buffer 0-127 using NRPN CC 98=64, CC 6 = buffer #)
104	DRIFT rate	0-127	
105	Revert / Reload patch	any non-0 value	sets new loop restore vals
106	Randomize Commands CC 6 = 1, 3, or 127 always sets new loop restore vals	0-7, 127	0 = (no effect) 1 = rand Loop/Word + Synth params 2 = rand Loop/Word: sets new loop restore vals if speak on (CC109) 3 = rand Synth params 4 = rand Drums (but not Kits) 5 = undo (rand / drift) 6 = rand internal Drum kits 7= restore Loop/Word 127 = rand All
107	Word Bank select	0-4	See Table 7 (sets loop restore vals)
108	Word index (in bank)	0-59	See Table 7 (sets loop restore vals)
109	Play mode	0-5	0 = LOOP reFILT off 1 = LOOP reFILT on resets filter each LOOP cycle 2 =Speak off: Loops, not Words 3= Speak on, multiword 4= Speak on, single word 5= Speak on, babble (random words)
110	Tempo clk PPQN scaler	0-127	24=unity @120bpm (1=24x, 0=48x)
111	LFO clk PPQN scaler	0-127	
112	LP length clk PPQN scaler	0-127	
113	Drum rate clk PPQN scaler	0-127	
114	MFO rate	0-127	
115	MFO fine tune	0-127	
116	MFO offset	0-127	
117	MFO Amp mod	0-127	

118	MFO Pitch mod	0-127	
119	MFO Filter mod	0-127	
120	Stop all sound	Any value	
121	Not used		
122	MFO mod depth mod	0-127	Multiplicative
123	All notes off		
126	MFO mod mix	0-127	From LPleng mod block
127	Echo Volume	0-127	

Outputs on MIDI channel 16: * see NRPN for additional outputs

CC 115	LFO1 CC OUTPUT
CC 116	LFO2 CC OUTPUT
CC 117	SLFO 1 CC OUTPUT
CC 118	CLFO 1 CC OUTPUT
CC 119	AHDSR / ENV OUTPUT

Table 2. GND-1T internal drum kits set via NRPN CC 98 = 47, 48, or 49 (custom kits were recorded specifically for the GND-1T) CC 6 =

0	off*	*setting the main kit to 0 also turns off m1 and m2 mod kits
1	ACE	Rhythm Ace drum machine
2	VNTGE	vintage drumbox
3	CR78a	CR 78 drum machine
4	CR78b	CR 78 drum machine
5	8000a	CR 8000 drum machine
6	8000b	CR 8000 drum machine
7	SYN1	custom Synth Kit 1
8	SYN2	custom Synth Kit 2
9	SYN3	custom Synth Kit 3
10	GAME	custom Synth/Game Kit
11	ELECTRO	custom retro Electro kit
12	ELEC 1	custom Electronic kit 1
13	ELEC 2	custom Electronic kit 2
14	ELEC 3	custom Electronic kit 3
15	ELEC 4	custom Electronic kit 4
16	808a	808 drum machine
17	808b	808 drum machine
18	909a	909 drum machine
19	909b	909 drum machine
20	CLUB a	custom club kit
21	CLUB b	custom club kit
22	MIX a	custom MIX kit
23	MIX b	custom MIX kit
24	ACST a	custom Acoustic kit
25	ACST b	custom Acoustic kit
26	ACST c	custom Acoustic kit
27	ACST d	custom Acoustic kit
28	HARD a	Hard acoustic kit
29	HARD b	Hard acoustic kit
30	TAIKO	Taiko drums
31	DAX a	custom daxophone kit

32	DAX b	custom daxophone kit
33	DAX c	custom daxophone kit
34	PERC	custom percussion kit
35	PICA	custom found sound kit
36	EPIC	Epic sound kit
37	TABLA	Tabla kit
38	WOOD	Log drum kit
39	BALI	custom Balinese tingklik xylophone
40	RAND	random kit (0-39) for each drum note (excludes DAX c)
41	RAND2	random kit (0-37) excludes tonal kits WOOD and BALI, and DAX c
42	USER1	user defined Kit 1 (see NRPN CC 98 = 110)
43	USER2	user defined Kit 2 (see NRPN CC 98 = 111)
44	USER3	user defined Kit 3 (see NRPN CC 98 = 112)

Table 3. GND-1T waveshape values (OSCW, modblock W1/W2, MFO)

Voiced Oscillator waveform values (set using CC 28)

0	Vocal glottal pulse (from Speak & Spell)
16	Saw
32	Square
48	PWM
64	Pitched Noise
80	Square octave up

Setting values between these causes cross fading between the two flanking waveforms

(LFO) Modulator waveform values (set using mod W1/W2 CC #)

Setting W1 shapes uses LFO1, SLFO1, and CLFO1 rates, and setting W2 uses LFO2, SLFO2, and CLFO2 rates

LFO 1 / 2 rate waveforms

0	Triangle
1	Square
2	Pulse 75% high
3	Pulse 25% high
4	Falling Exponential
5	Rising Exponential
6	Quantized PWM (3 PW steps per cycle)
7	Quantized PWM (4 PW steps)
8	Quantized PWM (5 PW steps)
9	RND RANDOM value each LFO cycle
10	8 RD 8-step RAND
11	6 RD 6-step RAND
12	SRD smoothed RAND

ENV based waveforms

13 ENV AHDSR envelope

14 INV inverse envelope

SLFO and CLFO rate waveforms

15 SLFO slow LFO 1 / 2

16 SLFO 10 thresholded to produce 10% high PW

17 SLFO 25 thresholded to produce 25% high PW

18 SLFO 50 thresholded to produce 50% high PW

19 SLFO 90 thresholded to produce 90% high PW

20 SLFO RP random pulse width on each SLFO cycle

21 SLFO R random value on each SLFO cycle

22 CLFO chaotic LFO 1 / 2

23 CLFO 10 thresholded to produce 10% high PW

24 CLFO 25 thresholded to produce 25% high PW

25 CLFO 50 thresholded to produce 50% high PW

26 CLFO 90 thresholded to produce 90% high PW

27 CLFO R random value on each SLFO cycle

LOOP rate waveforms

28 LP 10 10% high PW

29 LP 50 50% high PW

30 LP RND random values at LOOP rate

Other waveforms

31 OSCENV follows current OSCENV value (raw ROM levels if OSCENV is off)

32 DRUM follows current drum note(0-7), 8 steps of 1/7 spanning 0 –> 1.0

33 reverse order DRUM notes

34 FINE semitone sized constant ~0.059

35 DC = 1 max mod constant

36 SFO 1x2 multiplicaiton of SLFO 1 and SLFO 2

37 SFO1x2T multiplication of SLFO 1 x SLFO 2 thresholded at 0.5 max range

38 lfo.mfo Rungler style shift register waveform with lfo 1 or 2=clock, mfo=data (new in FW 241211)

Table 3 (continued)

MFO waveforms (set using NRPN CC 98 = 33)

Waveform #	Label	Description
0	SIN	Sinusoid (default)
1	SIN^3	Sinusoid raised to the power 3 (narrow lobes)
2	BROK	Broken Sinusoid (negative part shifted positive, positive part shifted negative) resulting in a sharp transient where sin 0-crossings normally occur
3	FALL	Ramp down
4	RISE	Ramp up
5	P 5	Pulse 5% high
6	P20	Pulse 20 % high
7	P 80	Pulse 80% high
8	P 95	Pulse 95% high
9	SQR	Square 50% high
10	PWM10	10% PWM re SQR at XPlfo rate
11	PWM20	20% PWM re SQR at XPlfo rate
12	PWM40	40% PWM re SQR at XPlfo rate
13	PWM60	60% PWM re SQR at XPlfo rate
14	PWM80	80% PWM re SQR at XPlfo rate
15	PWM	100% PWM re SQR at XPlfo rate

NRPN parameters (CC 99, 98, 6, 38)

Extended control is available using MIDI NRPN commands. To use NRPNs with the GND-1 issue the following CC commands (in this order):

(1) CC 99 (NRPN PARAM MSB) (2) CC 98 (NRPN PARAM LSB):

Together these determine the GND-1 NRPN function / parameter (table 3)

(3) optionally CC 38 (LSB) (4) CC 6 NRPN data (MSB)

e.g. To save or delete a patch:

1. Specify the BANK number (CC99=0, CC98=0, CC6=bank 0-9)

2. Specify the PATCH number within the BANK (CC99=0, CC98=1, CC6=patch 0-99)

3. Issue the delete or save command (CC99=0, CC98=2, CC6: 0=delete, otherwise save)

Parameters only need to be resent when they change. As an example of NRPN use, the following sequence will save the currently active patch to bank 1/ patch 4

CC 99=0

CC 98=0, CC6=1

CC 98=1, CC6=4

CC 98=2, CC6=1 (save rather than delete)

On power up, the GND-1 initializes CC 99 to 0, so setting CC 99 to 0 can often be omitted unless it has been changed via external control.

Table 4. GND-1T NRPN functions listing

CC 99	CC 98	function	CC 6 data (+CC 38 if specified)	Comments
0	0	Bank number (for delete or save)	0-9	Save sets new loop restore values
0	1	Patch number (for delete or save)	0-99	
0	2	Save/ delete specified patch	0=delete, else save	
0	3	Save/delete current patch	0=delete, 1= save, 2=save to Template	Template serves as 'blank patch' configuration
0	4	Apply / null multi mods	0=null. else apply & then null	
0	5	Clear expression matrix or part thereof	0 = all, 1=modwheel, 2=velocity, 3=breath, 4=aftertouch, 5=XPLFO	
0	6	CC output control[1]	0 = all off 1 = all out 2 = LFO 1 out off 3 = LFO 1 out to CC 115 4 = LFO 2 off 5 = LFO 2 out to CC 116 6 = SLFO1 off 7 = SLFO1 out to CC 117 8 = CLFO1 off 9 = CLFO1 out to CC 118 10 = AHDSR off 11 = AHDSR out to CC 119 12 = loop sync note out off 13 = loop sync note out on 14 = morphing note out off 15 = morphing note out on 16 = Status Out off 17 = Status Out On Status out messages are CC or NRPN commands that mirror those sent to the GND-1T, except on channel 16	All sent on midi CH 16 Note # 60 Note # 48 Status out messages from the GND-1 include: patch changes, run/stop, revert, rand (and undo), blockmorph, morph, manual, STPon, drift, Loop/Mod/Echo/Drift freeze, speak mode, loop-reFILTER, drum mute, INIT

0	7	ABS/REL CC mode	0=absolute (default) else relative	Relative mode is only available for unipolar 0-127 continuous parameters
0	8	Morph time	0 = fastest morph (immediate) 127 = slowest morph (minutes)	Applies to single morphed patch changes, and block-morphing
0	9	Wait Time	0 = negligeable 127 = minutes	'patch hold' between morph transitions in Block morphs
0	10	Morph Block size	0-99	Number of patches in the morphing block: 0-99 0 = single patch self-randomizing each cycle
0	11	Morph mode	0-3	0=sequential 1=random 2=sequential no drum morphs or randomization 3=random no drum morphs or randomization
0	12	Morph control	0-7	0 = single morph off 1= single morph on 2= block morph off 3= block morph on 4= manual morph off 5= manual morph on 6=inhibit PPQN morph 7=allow PPQN morph (default)
0	13	MIDI drum map	0-2	
0	14	Loop mode control *additive LP mod mode disables mod quantize, and causes LFO rates to be absolute (LPsnc override)	0-5	0 = multiplicative mod (allows Q) 1= additive mod (turns off Quant) 2= quantize off 3= quantize on (sets multiplic) 4= disable FILTER reset LPcycle 5=reset FILTER each loop cycle
0	15	Bipolar PostFilter mod	0-1	0=unipolar,1=bipolar
0	16	Multi exclude	0 -5	0 = include pitch and drum mods 1 = exclude pitch and drum mods 2 = include pitch

				3 = exclude pitch 4 = include drum mods 5 = exclude drum mods * drum mods = drate/dtrig here
0	17	Patch increment or decrement	1=increment 127=decrement	Applies to instant and morphed patch changes
0	18	Soft bends, FLIP, and Invert Plasma	0-5	0 = soft bends off 1=soft bends on (applies to Gravity and Plasma curves) 2=Flip off, 3= on 4=invert-Plasma off, 5= on
0	19	Inhibit DIN SysEx (speeds up USB sysex)	0 (default)= send SysEx to DIN else inhibit DIN SysEx.	Not accessible from GND-1T in S/A
0	20	LFO 1 and 2 modes	0-9	0 both absolute 1 both Loop scaled 2 LFO 1 absolute 3 LFO 1 Loop scaled 4 LFO 2 absolute 5 LFO 2 Loop scaled 6 LFOs restart on key or run 7 LFOs free 8 pulsar off 9 pulsar on
0	21	USB Audio out MODE	0 = off 1 = synth + drums 2 = drums	If usb out mode = drums, drums are removed from analog mix output
0	22	Steady Pitch	0 = use varying speech ROM pitch contour else use steady pitch	In steady pitch mode, setting Pitch=80, and Tune=64 causes Midi note on events sent to the GND-1 to play in tune re A-440Hz tuning regardless of the selected word or ROM loop address.
0	23	Speech Filter Soft-clip and mod-invert	0-3	0=soft clip off, 1=soft clip on, 2=invert mod off, 3=invert mod on
0	24	MORPH and WAIT progress output control (NRPN output to chan 16)	0 = disabled (default) else progress updates are at this param's value x50ms. E.g. "1" = 50ms updates, "10"= 500ms updates.	When enabled, MORPH progress (0-127) is sent out on chan 16, CC98=8. And WAIT updates (0-127) are sent to CC98=9.

0	25	MORPH STEP MODE ENABLE (STPon)	0 = off 1=on 2=onSync (restart loops) 3=keyStep (MIDI note on) 4=KeySync	In STEP modes instant patch changes in block-morph occur at STEP RATE(or key trig), rather than Morph time & Wait time
0	26	STEP RATE Used when MORPH STEP MODE is active	0 -127 0=slowest 127=fastest	
0	27	RELEASE PARAMETER EXCLUDE (from morphing, rand, drift)	GND-1 CC of parameter to re-enable	Manual parameter adjustments exclude the param from morphing, randomization, and drift. Use CC6 to send the CC of the specific param to re-enable, or send 121 to re-enable all params.
0	28	SAVE GLOBAL PARAMETERS Morph & Drift params, PBend ranges, USB IN & PF, Audio User Kits	Any value	Also saves XP vals for parameters that are mappable/assignable
0	29	STEP MODE SWING (alternating step interval duty cycle) Used when MORPH STEP MODE is active	0 -127 64=equal duty cycle (all intervals same length) 0 = shortest first interval (33%) 127=longest first interval (167%)	
0	30	Manual morph control value	0-127	If MANUAL morph is enabled
0	31	Manual morphing expression control	0-8	0=off 1,5=modw (5=modw matrix off) 2,6=velocity (6=vel matrix off) 3,7=breath (7= breath matrix off) 4,8=aftertouch (8=after matrix off)
0	32	MFO mode	0-6	0=pitch track off 1=pitch track on 2=AM turbo off 3=AM turbo on 4=MFO-mod affects MFO depth 5=MFO-mod affects MFO rate 6=MFO-mod affects both
0	33	MFO mod wav	0-15	see table 2
0	34	High Clock Rate	0-1	0=off, else on
0	35	OscEnv: apply Env (AHD) to OSC Energy	0-6	0=off, 1=AHD,2=AHD->0, 3=2+LPfrz, 4=2+modFrz, 5=AHDcycle, 6= 5+LPfrz

0	36	Drum rate mod, and improv, quantization	0-5	0=both off, 1=both on 2=Dratemod-Q off, 3=on 4=Improv-Q off, 5= on
0	37	ADSR retrigger source	0-12	0 = all off 1 = Loop (tempo) off 2 = Loop (tempo) on 3 = LFO1 off 4 = LFO1 on 5 = LFO2 off 6 = LFO2 on 7 = SLFO off 8 = SLFO on 9 = CFO off 10 = CLFO on 11=RunEnv off 12=RunEnv on (trigger env on RUN: allows 'live' sustain control)
0	38	XP freeze mode * Note that when mod frz is selected, the XPLFO is not included in the threshold calculation to avoid XP freeze lock-up	0-3	0=XP Loop frz 1=XP mod frz 2=XP echoFrz (looper mode) 3=XP Drift
0	39	KeyDown Retrigger Events "key+" indicates additional keydown events when there is already a key down	0-8	0 = no Loop or Env restart 1 = Both on, Attack from last val 2 = key+ restarts Loop = off 3 = key+ restarts Loop = on 4 = key+ no AHDSR ENV retrig 5 = key+ ENV retrig from last env val 6 = key+ ENV restart from 0 7= any key restarts MFO off 8= any key restarts MFO
0	40	Pitch mod modes	0-3	0= unipolar non-inverted + 1= unipolar inverted - 2 = bipolar non inverted +/- 3 = bipolar inverted -/+
0	41	Pitch add Fifth	0-3	0=off,1=down,2=up,3=modulate between off/down/up using Pmix waveform (depth=max)
0	42	Pitch bend up range	0-48	Semitones (applies to all patches)
0	43	Pitch bend down range	0-48	Semitones (applies to all patches)
0	44	MIDI Clock Sync Enable	0-9	0 = all off 1 = all on 2 = Tempo PPQN scaling off 3 = Tempo on 4 = LFO1+2 off 5 = LFO1+2 on

				6 = LP leng off 7 = LP leng on 8 = Drum rate off 9 = Drum rate on
0	45	Post LPF type	0-2	0= Hicut (1st order) 1= LPF ladder (4th order) 2= LPF State Variable (2nd order)
0	46	Post Filter Keytrack	0-1	0=off 1=on
0	47	Internal Drum map	0 – num kits	0=off, see table 2
0	48	I-Drum map mod1	0 – num kits	0=off, see table 2
0	49	I-Drum map mod2	0 – num kits	0=off, see table 2
0	50	Drums -> PF send	0 – 127	Internal drums send to post filter
0	51	USB audio in level	0 – 127	
0	52	USB audio in -> PF send	0 – 127	USB audio input send to post filter
0	53	USB audio out select	0-2	0=off, 1=mix, 2=I-Drums* * I-drums are not sent to analog output for mode 2
0	54	Echo Select input: PostFilter, Drums, USB	0-6	0=PF, 1= Drums, 2=PF+D, 3=usb, 4=usb+PF, 5=usb+D, 6=All
0	55	Global echo and drums (prevents change on patch loads or morphing)	0-3	0=off 1=only Echo params are global 2=only Drums are global 3= both echo and drums global
0	56	DRIFT mode	0-2	0=synth, 1=drums, 2=both
0	57	NULL BENDS* 1/2 (and Bend mods)	Any value	*Nulls target bend params if morphing
0	58	TOUCH RELEASE TIME (sensor response time)	0 = fastest 127=slowest	
0	59	TOUCH ATTACK TIME (sensor response time)	0 = fastest 127=slowest	
0	60	DRUM DECAY SCALER	0 = shortest decay 127=unaltered	When < 127, this shortens all drum sounds in the current patch
0	61	DRUM OUTPUT MODE SELECT	0-2	0=MIDI, 1=internal, 2=both
0	62	Dsrc=0 select	0-3	0=ROM,1=Lfo1, 2=Lfo2, 3=MIDI clock (trigger every 6 clocks)
0	63	Individual Drum Note Mutes	0, 1 or 127, 10-17, 20-27 All mutes are ineffective if MUTES is off/inactive (CC 6 = 0)	0 = Drum note mutes inactive 1, 127 = Drum note mutes active 10 =Kick mute off, 20 = mute on 11 =Snare mute off, 21 = mute on 12 =CHat mute off, 22 = mute on 13 =OHat mute off, 23 = mute on 14 =Ltom mute off, 24 = mute on 15 =Htom mute off, 25 = mute on 16 =Clap mute off, 26 = mute on 17 =Rim mute off, 27 = mute on
0	64	Perm Drift Buffer select	0-127	Load /Save using CC 103
0	65	Scene select	0-127	Load /Save using CC 98=66

0	66	Scene Load/Save/Delete	Load=1, Save=2, Delete=3	
0	67	Erode Bend	0=off, else on	Erosion rate varies with Tempo parameter (new in FW 241103)
0	68	Note XP mode	0-5	0=off, 1=mWL 2=Brth, 3= AfterT, 4= patch, 5 = pitched patch (4&5 are new in FW 241211)
0	69	Touch XP mode	0-9	0=off, 1=mWL 2=Brth, 3= AfterT, 4= PbendUp, 5 =PbendDn, 6=EnvTrig, 7=Env+Breath, 8=NoteTrig, 9=Note+Breath
0	70	Enc XP mode	0-6	0=mWL 1=Brth, 2= AfterT, 3= DriftBuffer, 4=mWL+[XP]DrftBuf, 5 =Brth+[XP]DrftBuf, 6=AfterT+[XP]DrftBuf
0	100	High Resolution expression map scaler values in the range -127 to +127	CC 38 = scaler sign (0 = pos, else neg) CC6 = absolute value of the scaler	Set CC11 and 12 in the usual way first, then send NRPN CCs 99=0, 98=100, 38 (sign), and CC6 (abs val), in that order
0	101	High Resolution multi-mod DEPTH the range -99 to +99	CC 38 = sign (0 = positive) CC6 = 0-99	
0	102	High Resolution multi-mod MIX in the range -99 to +99	CC 38 = sign (0 = positive) CC6 = 0-99	
0	103	High Resolution multi-mod W1 in the range -99 to +99	CC 38 = sign (0 = positive) CC6 = 0-99	
0	104	High Resolution multi-mod W2 in the range -99 to +99	CC 38 = sign (0 = positive) CC6 = 0-99	
0	105	High Resolution multi-LFO in the range -99 to +99	CC 38 = sign (0 = positive) CC6 = 0-99	Affects LFOs, SLFO, CLFO
0	106	High resolution FILTER (10 bits)	CC 38 = fraction step 0-7 CC6 = 0-127	fractions steps are 0.125, e.g. 7 = 0.875, CC6 value same as CC 40
0	107	High resolution POST FILTER (10 bits)	CC 38 = fraction 0-7 CC6 = 0-127	fractions steps are 0.125 each CC6 value same as CC 92
0	108	High resolution PITCH (11 bits)	CC 38 = fraction 0-15 CC6 = 0-127 (semitones)	fractions steps 0.0625, e.g. 15 = 0.9375, CC6 value same as CC 33
0	109	High resolution TEMPO (10 bits)	CC 38 = fraction 0-7 CC6 = 0-127 (semitones)	fractions steps are 0.125 each CC6 value same as CC 92
0	110	User1 kit define	CC 38 = drum number CC6 = kit 0 - 41 (table2)	0=kick, 1=snare, 2=chat, 3=ohat, 4=ltom, 5=htom, 6=clap, 7=rim Save using Save Global Params
0	111	User2 kit define	As above	Save using Save Global Params
0	112	User3 kit define	As above	Save using Save Global Params
0	113	Revert user kit	User kit (1-3)	Revert to last (global) saved
0	114[2]	MIDI Dmap0 define	CC 38 = drum number: CC6 = MIDI note 0-127	0=kick, 1=snare, 2=chat, 3=ohat, 4=ltom, 5=htom, 6=clap, 7=rim

0	115	MIDI Dmap1 define	As above	
0	116	MIDI Dmap2 define	As above	
0	121	INIT Initialize GND-1T param for words	Any value	*See next page
1	Param CC	XP mapping shortcut	CC 38 =controller CC 6 = bipolar depth (64=0)	Single command shortcut for XP mapping. CC 98 sets the parameter via its MIDI CC

1. Note that in addition to the status output (NRPN CC6 = 6) the GND-1 outputs midi active sensing at 250ms intervals when mid output (e.g. drums) is inactive.

2. (NRPN CC98=114) MIDI Dmap 0 also sets the note values that can be received by the GND-1T to trigger the currently selected internal Drum Kit sounds. To disable automated algorithm drum triggers, and only hear receieved drums, turn off DRUMS on the main patch page. Or set the drum trigger parameters on the Drum1 page to zero. To enable/disable channel 10 drum receive responses, toggle “drmRX on/off” parameter on the MIDI page (P20) by holding ALT and tapping the Midi Ch button (User manual P25).

* NRPN CC 98 = 121 “Initialize” reset state (INIT)

Issuing the initialize command sets most GND-1T parameters to 0, with the following exceptions:

Tempo = 75	Loop = 90	Word index = 1	Repeats = 40
Delay = 44	XPlfo scaler = 127	Pitch = 80	Tune = 64
LFO1 rate = 64	LFO2 rate = 64	Drum rate = 64	Drum trig = 64
Drum src = 40	Drum vol = 127	Drum Decay = 127	DrumVelVar = 100
SLFO rate = 64	CLFO rate = 64	Brightness = 64	PostFilter = 127
Unvoiced = 127	PF(synth) Vol = 127	(env) Hold = 10	Decay = 60
Sustain = 127	Release = 40	OscGain = 64	

All morphing and Freeze modes are switched off

In addition, all clock sync PPQN scalers are set to 24, resulting in unity scaling at 120 BPM. Furthermore, the pitch parameter expression matrix value linked to breath control is initialized to negative 0.25 of the full range. If the GND-1T touch sensor is mapped to the breath controller, as is the factory default, INIT causes the patch to be initialized with the touch sensor producing a downward pitch shift.

Table 5. Expanded XPparams (via CC10)

Use CC10 instead of CC11 for expression mapping of these parameters:

CC 10 value	Parameter
0	MULTIMOD
1	MULTIMIX
2	MULTIWAV1
3	MULTIWAV2
4	MULTILFO
5	MFOWAV
6	DRUMPF
7	IDRUMMAP (internal kit)
8	DRUMMOD1 (internal mod kit1)
9	IDRUMMOD2 (internal mod kit2)
10	USBLEVELIN
11	USBMIX
12	PBENDUP
13	PBENDDOWN
14	ECHOSELECT
15	(MIDI) DRUMMAP
16	TOUCH SENSOR RELEASE
17	TOUCH SENSOR ATTACK
18	DRUM_DECAY
19	OSCENV
20	STEP (MORPH) RATE

Note that adjusting any continuous parameter value via MIDI, or selecting or adjusting it on a GND-1T itself, will set that parameter as the one subsequently being expression mapped

GND-1T Sysex patch data format (hex values)

Each patch is described by 6 consecutive blocks: 1 parameter block, followed by 5 expression matrix blocks. All sysex blocks are delineated by a starting byte F0 and closing byte F7. Following F0, the GND-1T identifier is always 07 07 07. Following that is the block function descriptor:

7F = main parameter block (contains patch + bank + main parameters)

7E=modw expression matrix

7D=velocity matrix

7C=breath matrix

7B=aftertouch matrix

7A=XPlfo matrix

*** When sending a sysex patch to the GND1, the order must be: 1. Param block (block type 7F), 2. XP blocks for modw – aftertouch (7E - 7B), and lastly 3. XP block for XPlfo (7A). Upon receiving the XPlfo block, the GND-1T saves the complete patch to SD, and assumes the previous blocks have already been received.

NOTE: upon receiving the initial main parameter block, the GND-1T mutes the audio until the corresponding XPlfo block has been received.

GND-1T Sysex requests

The GND-1T responds to sysex patch data requests in the following format:

F0 07 07 07 command patch bank F7

GND-1T patches 0 - 999 over MIDI are split into bank (100s digit) and patch (remainder 0-99). Command specifies which blocks in the patch/bank are requested:

all blocks = 0x64

param block = 0x6F

Xp modw = 0x6E

Xp vel = 0x6D

Xp breath = 0x6C

Xp after = 0x6B

Xp XPlfo = 0x6A

To check if a patch (in MIDI bank/patch format) exists in the GND-1T send it the following sequence:

F0 07 07 07 37 patch bank F7

It will respond with a message indicating whether the patch exists (0=no, 1=yes), and if so, whether drums are muted for that patch (0 no,1 yes, 2 invalid patch)

F0 07 07 07 37 patch bank exists drum-mute F7

It is also possible to request

(1) The saved preset parameters for the patch number the GND-1T is currently set to
(2) The currently active patch parameters

The sequence in this case requires no patch/bank number:

F0 07 07 07 command F7

In each case the returned bank and patch numbers in the response sysex block(s) inform you of the patch number the GND-1T is set to.

The Sysex command values to request the saved parameters for the current GND-1T patch are:

all blocks = 0x54

param block = 0x5F

Xp modw = 0x5E

Xp vel = 0x5D

Xp breath = 0x5C

Xp after = 0x5B

Xp XPlfo = 0x5A

The Sysex command values to request the currently active patch parameters are :

all blocks command = 0x44

Param block = 0x4F

Xp modw = 0x4E

Xp vel = 0x4D

Xp breath = 0x4C

Xp after = 0x4B

Xp XPlfo = 0x4A

The current USER1, 2 and 3 audio drum kit assignments can be requested using: F0 07 07 07 3A F7

The response is of the form: F0 07 07 07 3A USER1 (8 bytes) USER2 (8 bytes) USER3 (8 bytes) F7

Where the 8 bytes for each user-kit describe the 8 drum-note kit numbers (table2) in the order Kick, Snare, Chat, Ohat, Ltom, Htom, Clap, Rim.

The current MIDI DRUM MAPS can be requested using: F0 07 07 07 3B F7

The response is of the form F0 07 07 07 3B MAP0 (8 bytes) MAP1 (8 bytes) MAP2 (8 bytes) F7

Where the 8 bytes for each map describe the 8 MIDI drum-notes in the order Kick, Snare, Chat, Ohat, Ltom, Htom, Clap, Rim.

Perrmanent Drift buffers (0-127) values can be requested using:

F0 07 07 07 69 buffer F7

The GND-1T will respond with a message containing the drift offsets, which can be sent to the GND-1T to set those values for that buffer, or change buffer to apply them to another buffer (0-127)

F0 07 07 07 79 buffer 00 00 00 00 00 [data] F7

Scene (0-127) data can be requested using:

F0 07 07 07 68 scene F7

It will respond with a sequence of message blocks containing the Scene information, with command values starting at 78 and going down to 70. Using your MIDI manager, save these 9 consecutive blocks as a single SysEx file, which can be sent back to the GND-1T at a later time to reinstate the Scene. Or modify the Scene number in each of the 9 blocks before sending to save the Scene data to another scene (0-127) in the GND-1T. Each block takes the form:

F0 07 07 07 78-70 scene [data] F7

To check if a scene exists:

F0 07 07 07 3C Scene F7

Responds with

F0 07 07 07 3C Scene [exists] F7

Where exists =0 means the scene doesn't exist (free slot), or 1 means it does

To check if a permanent drift buffer exists:

F0 07 07 07 3D Drift buffer F7

Responds with

F0 07 07 07 3D Drift buffer [exists] F7

Where exists =0 means the Drift buffer doesn't exist (free slot), or 1 means it does

Table 6. GND-1T WORD LISTS

Word Bank >	0	1	2	3	4
Word #					
0	tones 1	above	abscess	achieve	against
1	tones 2	almost	already	ancient	angel
2	tones 3	another	answer	anxious	anything
3	tones 4	approve	beauty	beige	believe
4	tones 5	blood	boulder	brother	built
5	A	bulletin	bullet	bureau	bushel
6	B	business	butcher	calf	caravan
7	C	cherry	chock	child	circuit
8	D	cleanser	colour	comfort	coming
9	E	conquer	correct	corsage	couldn't
10	F	country	couple	courage	cousin
11	G	danger	discover	does	dozen
12	H	dread	dungeon	early	earnest
13	I	earth	echo	egg	enough
14	J	error	every	everyone	extra
15	K	eyebrow	feather	field	finger
16	L	fired	flood	floor	freight
17	M	front	garage	gasoline	glacier
18	N	glove	greater	guard	guess
19	O	guide	half	haste	health
20	P	healthy	heaven	heavy	heroes
21	Q	honey	honour	hostess	hygiene
22	R	improve	instead	iron	is
23	S	island	isle	jealous	journey
24	T	key	language	laugh	laughter
25	U	learn	leather	leisure	lettuce
26	V	library	liquorish	linger	lose
27	W	machine	manger	marry	meadow
28	X	meaning	measure	mechanic	mild
29	Y	minute	mirror	mistake	money
30	Z	mosquito	most	mother	movie
31	0	moustache	narrow	neighbour	niece
32	1	nuisance	ocean	once	onion
33	2	other	outdoor	oven	period
34	3	pianos	pierce	Pint	plague
35	4	pleasant	pleasure	plunger	plural
36	5	police	postage	poultry	pretty
37	6	priest	promise	pull	push
38	7	question	quiet	quotient	range
39	8	ranger	ready	reindeer	relief
40	9	relieve	remove	rhythm	rock
41	10	rural	sardine	says	schedule
42	wrong	school	scissors	search	serious
43	I win	shield	should	shoulder	shovel
44	now spell	sign	ski	smother	soldier
45	now try	someone	sometime	source	say it
46	perfect score	sponge	spread	squad	squash
47	Spell	squat	statue	stomach	stranger
48	that is correct	sugar	sure	surgeon	swamp
49	that is incorrect	swan	swap	sweat	sweater
50	that is right	talk	terror	today	tomorrow
51	the correct spelling of	tonne	tongue	touch	tough
52	try	toward	treasure	trouble	to wed
53	try again	uncover	union	usual	view
54	you are correct	walk	warm	was	wash
55	you are right	watch	water	wealth	weird
56	you win	welcome	wild	wolves	woman
57	as in	wonder	word	workman	world
58	here is your score	worth	yacht	yield	yolk
59	next spell	young	yourself	Youth	zeros