

MIDX Boss MS-3 - MIDI Implementation

Version: Feb 11 2018 V2.7

CC#2 – Bank DOWN, CC#3 – Bank UP, CC# 32 – Set Bank LSB (0-49)

PC# 00 - PC# 127 - Change Patch Number

Note: MS-3 patch number = BankLSB x 4 + PC#

PRESET CC's

RECALL/SELECT PATCH = CC# 4 (0-127)
STORE TO PATCH = CC# 5 (0-127)
STORE TO CURRENT PATCH = CC# 6 (value=127)
Note: You have to set Bank LSB to access Patch > '32-4'

FOOT VOL CC's

FOOT VOL LEVEL = CC#24 (0-127)
FOOT VOL MIN = CC#25 (0-127)
FOOT VOL MAX = CC#26 (0-127)
FOOT VOL CURVE = CC#27 (0-3 = Slow1/Slow2/Normal/Fast)

LOOP CC's

LOOP 1 ON/OFF = CC#28 (0-63 OFF, 64-127 ON)
LOOP 2 ON/OFF = CC#29 (0-63 OFF, 64-127 ON)
LOOP 3 ON/OFF = CC#30 (0-63 OFF, 64-127 ON)

NOISE GATE (NS) CC's

NOISE GATE ON/OFF = CC#20 (0-63 OFF, 64-127 ON)
NOISE GATE THRESHOLD = CC# 21 (0-127)
NOISE GATE RELEASE = CC# 22 (0-127)
NOISE GATE DETECT = CC# 23 (0-2) 0=Input, 1=NS Input, 2=FV Out

MASTER CC's

PATCH VOLUME = CC#7 (0-127)

SOLO SWITCH = CC#8 (0-63 OFF, 64-127 ON)
SOLO LEVEL = CC#9 (0-127)

MASTER EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: HIGH GAIN = CC# 12 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID FREQ = CC# 13 (0..27) 20Hz-10kHz
MASTER EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

MASTER KEY = CC# 15 (0-11) C,Db,D,Eb,E,F#,G,Ab,A,Bb,B
TAP TEMPO DELAY = CC# 16 (Measures ms. between each CC, Sets DELAY Time only)
TEMPO HOLD = CC# 19 (0-63=OFF, 64-127=ON)

GLOBAL CC's

GLOBAL VOLUME = CC#121 (0-127, 63=0dB)

GLOBAL EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
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GLOBAL EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

BPM (Beats Per Minute)

TAP TEMPO MASTER BPM = CC# 17

(Measures ms. between each CC, Sets MASTER BPM)

MASTER BPM = CC# 18 (0-127, 0=40BPM, 127=250 BPM)

The BPM value may control the Rate or Delay Time of the following effects:

(Tip: 'Quarter Note' is a good initial setting)

DELAY TIME CC# 108

REVERB DELAY (TYPE 7) CC# 98

FX1 CC# 79 and FX2 CC# 94

SUB DELAY TIME

MOD1 CC#46 and MOD2 CC#61

CHORUS RATE, CHORUS 2X2 LO RATE, PHASER RATE, FLANGER RATE, BASS FLANGER RATE, TREMOLO RATE, PAN RATE, ROTARY SLOW RATE

MOD1 CC#47 and MOD2 CC#62

CHORUS 2X2 HI RATE

Delay CC's

DELAY ON/OFF = CC# 109 (0-63 OFF, 64-127 ON)

DELAY & DUAL D1 TIME BY BPM = CC#108

DUAL D2 TIME BY BPM = CC#120

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note, 7=Triplet of Half Note, 8=Dotted Quarter Note, 9=Half Note, 10=Triplet of Whole Note, 11=Dotted Half Note, 12=Whole Note)

CC# 110 Delay Effects	CC# 111 0-127	CC# 112 0-127 (1-2000ms)	CC# 113 0-127	CC# 114 0-127 (127=flat)	CC# 115 0-127	CC# 116 0-127	CC# 117 0-127	CC# 118 0-127	CC# 119 0-127
Single = 0	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Pan = 1	E. Level	Time	D. Level	High cut	Feedback	-	-	Tap time	-
Stereo = 2	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Dual-S = 3	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual-P = 4	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual L/R = 5	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Reverse = 6	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Analog = 7	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Tape = 8	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Modulate = 9	E. Level	Time	D. Level	High cut	Feedback	Mod. rate	Mod. depth	-	-
Tera Echo = 10	E. Level	Time	D. Level	Tone	Feedback	-	-	Hold <=63 off >=64 on	Type(0-2) 0=Mono 1=Stereo1 2=Stereo2

Reverb CC's

REVERB ON/OFF = CC# 99 (0-63 OFF, 64-127 ON)

DELAY (REVERB TYPE 7) TIME BY RPM = CC#98

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note)

CC# 100 Reverb Type	CC# 101 0-127	CC# 102 0-127 (0.1-10s)	CC# 103 0-127	CC# 104 0-127= 0-500ms	CC# 105 0-127= 0-800Hz	CC# 106 0-127= 630-12.5kHz	CC#107 0-127
Ambience = 0	Level	Time	D. Level	-	Low cut	Hi cut	-
Room = 1	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall1 = 2	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall2 = 3	Level	Time	D. Level	-	Low cut	Hi cut	-
Plate = 4	Level	Time	D. Level	-	Low cut	Hi cut	-
Spring = 5	Level	Time	D. Level	-	Low cut	Hi cut	Spring
Modulate = 6	Level	Time	D. Level	-	Low cut	Hi cut	-
Delay = 7	Level	D. Time (*)	D. Level	Feedback	-	Hi cut	-

(*) 0-170=1ms-650ms

MOD1 and MOD2

MOD1 ON/OFF = CC# 34 (0-63 OFF, 64-127 ON)

MOD2 ON/OFF = CC# 49 (0-63 OFF, 64-127 ON)

The MOD1 effects are identical with MOD2 effects. Hence the shared table.

MOD1: MOD2: Effects	CC# 35 CC# 50	CC# 36 CC# 51	CC# 37 CC# 52	CC# 38 CC# 53	CC# 39 CC# 54	CC# 40 CC# 55	CC# 41 CC# 56	CC# 42 CC# 57	CC# 43 CC# 58	CC# 44 CC# 59	CC# 45 CC# 60	CC# 46 CC# 61	CC# 47 CC# 62
	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	(*)	(*)	(*)	(*)	(*)
Chorus = 0	E. Level	Rate	D.Level	Depth	Low cut	Hi cut	Pre Delay	Mode(e)	-	-	-	Rate by BPM (r1)	-
2x2 Chorus = 1	Lo Level	Lo Rate	D.Level	Lo Depth	Hi Level	Hi Rate	Hi Depth	Lo pre del 0-127 (40ms)	Hi pre del 0-127 (40ms)	XO Freq (b)	Lo Rate by BPM (r1)	Hi Rate by BPM (r1)	-
Phaser = 2	E.Level	Rate	D. Level	Depth	Reso	Manual	Step rate	Type (d)	-	-	Rate by BPM (r1)	Step rate by BPM (r1)	-
Flanger =3	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	-
Bass Flanger =4	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	-
Tremolo = 5	Level	Rate	-	Depth	Wave	-	-	-	-	-	Rate by BPM (r1)	-	-
Pan = 6	Level	Rate	-	Depth	Wave	Position	-	Type (pt)	-	-	Rate by BPM (r1)	-	-
Rotary = 7	E.Level	Rate slow	D.Level	Depth	Rate fast	Balance	Speed sel 0-63 Slow 64-127 Fast	-	Rise time 0-127	Fall time 0-127	Rate Slow by BPM (r1)	Rate Fast by BPM (r1)	-
Uni-V = 8	Level	Rate	-	Depth	-	-	-	-	-	-	Rate by BPM (r1)	-	-
Slicer = 9	Level	Rate	D.Level	-	Trig sens	-	-	Pattern(z)	-	-	Rate by BPM (r1)	-	-
Vibrato = 10	Level	Rate	-	Depth	Rise time	Trigger	-	-	-	-	Rate by BPM (r1)	-	-
Ring mod = 11	Level	Freq	D.Level	-	-	-	-	Type(aa)	-	-	-	-	-

FX1 and FX2												
FX1 ON/OFF = CC# 69 (0-63 OFF, 64-127 ON)												
FX2 ON/OFF = CC# 84 (0-63 OFF, 64-127 ON)												
The FX1 effects are identical with FX2 effects. Hence the shared table.												
FX1: CC# 70 FX2: CC# 85 Effects	CC# 71 CC# 86 0-127	CC# 72 CC# 87 0-127	CC# 73 CC# 88 0-127	CC# 74 CC# 89 0-127	CC# 75 CC# 90 0-127	CC# 76 CC# 91 0-127	CC# 77 CC# 92 0-127	CC# 78 CC# 93 (*)	CC# 79 CC# 94 (*)	CC# 80 CC# 95 (*)	CC# 81 CC# 96 (*)	CC# 82 CC# 97 (*)
Compressor = 0	Level	Sustain	-	Attack	Tone	-	-	Type (f)	-	-	-	-
Limiter = 1	Level	Ratio	-	Attack	Threshold	Release	-	Type (g)	-	-	-	-
T.Wha = 2	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Bass T. Wah = 3	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Auto Wah = 4	E.Level	Rate	D.Level	Depth	Freq	Peak	-	Mode (h)	-	-	-	-
Wah = 5	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
Bass Wah = 6	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
OD/DS = 7	E. Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (od)	-	-	-	-
Bass OD/DS = 8	E.Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (odb)	-	-	-	-
Graphic EQ = 9	Level	1kHz	-	31Hz	62Hz	125Hz	250Hz	500Hz	2kHz	4kHz	8kHz	16kHz
Param EQ = 10	Level	Lo mid gain	-	Lo gain	Hi mid gain	Hi gain	-	Lo mid f. (k)	Lo md Q (l)	Hi mid f. (m)	Hi mid Q (l)	-
AC. Guitar Sim = 11	Level	Body	-	Low	High	-	-	-	-	-	-	-
Defretter = 12	Level	Depth	D.Level	Tone	Sens	Attack	Reso	-	-	-	-	-
Sitar Sim = 13	E.Level	Depth	D.Level	Tone	Sens	Buzz	Reso	-	-	-	-	-
Slow gear = 14	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Bass Slow Gear = 15	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Octave = 16	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Bass Octave = 17	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Pitch shifter = 18	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Bass P.Shifter = 19	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Harmonist = 20	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Bass Harmonist = 21	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Overtone = 22	Upr Level	Lwr Level	D.Level	Detune	Tone	-	-	-	-	-	-	-
Pedal Bend = 23	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Bass Ped. Bend = 24	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Sound Hold = 25	E. Level	Trigger	-	Rise Time	-	-	-	-	-	-	-	-
S-Bend = 26	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Bass S-Bend = 27	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Warp = 28	Level	Trigger	-	Rise Time	Fall Time	-	-	-	-	-	-	-
Feedbacker = 29	Depth	Trigger	-	-	-	-	-	-	-	-	-	-
Sub Delay = 30	E. Level	Time	Dir level	High cut	Feedback	Tap time	-	Type(q)	Time by BPM (t1)	-	-	-

Note: Pitch Shifter Feedback parameter not implemented.

(*) Range of special parameters			
Code	Description	CC Value Range	Representation
aa	Ring mod type	0-1	NORMAL/INTELLIGENT
b	Xover Freq	0-16	100Hz-4kHz
c	Low cut	0-10	Flat – 800Hz
d	Phaser Type	0-3	4Stage/8Stage/12Stage/BiPhase
e	Chorus	0-2	MONO/STEREO1/STEREO2
f	Compressor Type	0-7	Boss/HiBand/Light/D-comp/Orange/Fat/Mild/Stereo
g	Limiter Type	0-2	Boss/Rack 160D/VTG Rack U
h	Wah Mode	0-1	LPF/BBP
i	Wah Polarity	0-1	DOWN/UP
j	Wah Type	0-5	Cry/Vox/Fat/Light/7String/Reso
k	Lo-Mid Freq	0-27	20Hz-10kHz
l	Q	0-5	0.5/1/2/4/8/16
n	Guitar Sim Type	0-7	S->H/H->S/H->HF/S->HOLLOW/H->HOLLOW/S->AC/H->AC/P->AC
o	AC Processor Type	0-3	SMALL/MEDIUM/BRIGHT/POWER
p	Pitch shifter mode	0-3	FAST/MEDIUM/SLOW/MONO
pb	Pedal bend	0-49	-24 - +24
pt	Pan Type	0-1	Auto/Manual
q	Sub delay	0-1	MONO/PAN
r	Pitch Shifter Type	0-2	1VOICE/2VOICE MONO/2VOICE STEREO
r1	Rate by BPM	0-12	0=Whole Note, 1=Dotted Half Note, 2=Triplet of Whole Note, 3=Half Note, 4=Dotted Quarter Note, 5=Triplet of Half Note, 6=Quarter Note, 7=Dotted 8 th Note, 8=Triplet of Quarter Note, 9=8 th Note, 10=Dotted 16 th Note, 11=Triplet of 8 th Note, 12=16 th Note
t	Harmonist Type	0-1	1VOICE/2VOICE
t1	Time by BPM		0=16 th Note, 1=Triplet of 8 th Note, 2=Dotted 16 th Note, 3=8 th Note, 4= Triplet of Quarter Note, 5=Dotted 8 th Note, 6=Quarter Note
s	Pitch Shifter Pitch	0-48	-24 -> 0 -> +24
sb	S-Bend	0-6	-3oct/-2oct /-1oct /+1oct /+2oct /+3oct /+4oct
u	Harmony	0-29	-2oct, -14 th , -13 th , -12 th , -11 th , -10 th , -9 th , -1oct, -7 th , -6 th , -5 th , -4 th , -3 rd , -2 nd , Unison, +2 nd , +3 rd , +4 th , +5 th , +6 th , +7 th , +1oct, +9 th , +10 th , +11 th , +12 th +13 th , +14 th , +2oct, User
v	Master Key	0-11	C(Am), Db(Bbm), D(Bm), Eb(Cm), E(C#m), F(Dm), F#(D#m), G(Em), Ab(Fm), A(F#m), Bb(Gm), B(G#m)
z	Pattern	0-19	P1-P20
od	OD/DS Type	0-20	MID BOOST/CLEAN BOOST/TREBLE BOOST/CRUNCH/NATURAL OD WARM OD/ FAT DS/LEAD DS/METAL DS/OCT FUZZ/ BLUES OD OD-1/T-SCREAM/TURBO OD/DIST/RAT/GUV DS/DST+/METAL ZONE '60S FUZZ/MUFF FUZZ
odb	Bass OD/DS Type	0-5	MID BOOST/CLEAN BOST/TREBLE BOST/BASS OD/BASS DST/BASS MUFF
tm	Modify Type	0-7	FAT/PRESENCE/MILD/TIGHT/ENHANCE/RESONATOR1/RESONATOR2/RESONATOR3

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MASTER BPM = CC# 18 (0-127, 0=40BPM, 127=250 BPM)

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Single = 0	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Pan = 1	E. Level	Time	D. Level	High cut	Feedback	-	-	Tap time	-
Stereo = 2	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Dual-S = 3	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual-P = 4	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual L/R = 5	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Reverse = 6	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Analog = 7	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Tape = 8	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Modulate = 9	E. Level	Time	D. Level	High cut	Feedback	Mod. rate	Mod. depth	-	-
Tera Echo = 10	E. Level	Time	D. Level	Tone	Feedback	-	-	Hold <=63 off >=64 on	Type(0-2) 0=Mono 1=Stereo1 2=Stereo2

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Hall1 = 2	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall2 = 3	Level	Time	D. Level	-	Low cut	Hi cut	-
Plate = 4	Level	Time	D. Level	-	Low cut	Hi cut	-
Spring = 5	Level	Time	D. Level	-	Low cut	Hi cut	Spring
Modulate = 6	Level	Time	D. Level	-	Low cut	Hi cut	-
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The MOD1 effects are identical with MOD2 effects. Hence the shared table.

MOD1: MOD2: Effects	CC# 35 CC# 50	CC# 36 CC# 51	CC# 37 CC# 52	CC# 38 CC# 53	CC# 39 CC# 54	CC# 40 CC# 55	CC# 41 CC# 56	CC# 42 CC# 57	CC# 43 CC# 58	CC# 44 CC# 59	CC# 45 CC# 60	CC# 46 CC# 61	CC# 47 CC# 62
	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	(*)	(*)	(*)	(*)	(*)
Chorus = 0	E. Level	Rate	D.Level	Depth	Low cut	Hi cut	Pre Delay	Mode(e)	-	-	-	Rate by BPM (r1)	-
2x2 Chorus = 1	Lo Level	Lo Rate	D.Level	Lo Depth	Hi Level	Hi Rate	Hi Depth	Lo pre del 0-127 (40ms)	Hi pre del 0-127 (40ms)	XO Freq (b)	Lo Rate by BPM (r1)	Hi Rate by BPM (r1)	
Phaser = 2	E.Level	Rate	D. Level	Depth	Reso	Manual	Step rate	Type (d)	-	-	Rate by BPM (r1)	Step rate by BPM (r1)	
Flanger =3	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Bass Flanger =4	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Tremolo = 5	Level	Rate	-	Depth	Wave	-	-	-	-	-	Rate by BPM (r1)	-	
Pan = 6	Level	Rate	-	Depth	Wave	Position	-	Type (pt)	-	-	Rate by BPM (r1)	-	
Rotary = 7	E.Level	Rate slow	D.Level	Depth	Rate fast	Balance	Speed sel 0-63 Slow 64-127 Fast	-	Rise time 0-127	Fall time 0-127	Rate Slow by BPM (r1)	Rate Fast by BPM (r1)	
Uni-V = 8	Level	Rate	-	Depth	-	-	-	-	-	-	Rate by BPM (r1)	-	
Slicer = 9	Level	Rate	D.Level	-	Trig sens	-	-	Pattern(z)	-	-	Rate by BPM (r1)	-	
Vibrato = 10	Level	Rate	-	Depth	Rise time	Trigger	-	-	-	-	Rate by BPM (r1)	-	
Ring mod = 11	Level	Freq	D.Level	-	-	-	-	Type(aa)	-	-	-	-	

FX1 and FX2												
FX1 ON/OFF = CC# 69 (0-63 OFF, 64-127 ON)												
FX2 ON/OFF = CC# 84 (0-63 OFF, 64-127 ON)												
The FX1 effects are identical with FX2 effects. Hence the shared table.												
FX1: CC# 70 FX2: CC# 85 Effects	CC# 71 CC# 86 0-127	CC# 72 CC# 87 0-127	CC# 73 CC# 88 0-127	CC# 74 CC# 89 0-127	CC# 75 CC# 90 0-127	CC# 76 CC# 91 0-127	CC# 77 CC# 92 0-127	CC# 78 CC# 93 (*)	CC# 79 CC# 94 (*)	CC# 80 CC# 95 (*)	CC# 81 CC# 96 (*)	CC# 82 CC# 97 (*)
Compressor = 0	Level	Sustain	-	Attack	Tone	-	-	Type (f)	-	-	-	-
Limitter = 1	Level	Ratio	-	Attack	Threshold	Release	-	Type (g)	-	-	-	-
T.Wha = 2	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Bass T. Wah = 3	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Auto Wah = 4	E.Level	Rate	D.Level	Depth	Freq	Peak	-	Mode (h)	-	-	-	-
Wah = 5	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
Bass Wah = 6	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
OD/DS = 7	E. Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (od)	-	-	-	-
Bass OD/DS = 8	E.Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (odb)	-	-	-	-
Graphic EQ = 9	Level	1kHz	-	31Hz	62Hz	125Hz	250Hz	500Hz	2kHz	4kHz	8kHz	16kHz
Param EQ = 10	Level	Lo mid gain	-	Lo gain	Hi mid gain	Hi gain	-	Lo mid f. (k)	Lo md Q (l)	Hi mid f. (m)	Hi mid Q (l)	-
AC. Guitar Sim = 11	Level	Body	-	Low	High	-	-	-	-	-	-	-
Defretter = 12	Level	Depth	D.Level	Tone	Sens	Attack	Reso	-	-	-	-	-
Sitar Sim = 13	E.Level	Depth	D.Level	Tone	Sens	Buzz	Reso	-	-	-	-	-
Slow gear = 14	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Bass Slow Gear = 15	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Octave = 16	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Bass Octave = 17	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Pitch shifter = 18	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Bass P.Shifter = 19	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Harmonist = 20	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Bass Harmonist = 21	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Overtone = 22	Upr Level	Lwr Level	D.Level	Detune	Tone	-	-	-	-	-	-	-
Pedal Bend = 23	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Bass Ped. Bend = 24	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Sound Hold = 25	E. Level	Trigger	-	Rise Time	-	-	-	-	-	-	-	-
S-Bend = 26	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Bass S-Bend = 27	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Warp = 28	Level	Trigger	-	Rise Time	Fall Time	-	-	-	-	-	-	-
Feedbacker = 29	Depth	Trigger	-	-	-	-	-	-	-	-	-	-
Sub Delay = 30	E. Level	Time	Dir level	High cut	Feedback	Tap time	-	Type(q)	Time by BPM (t1)	-	-	-

Note: Pitch Shifter Feedback parameter not implemented.

(*) Range of special parameters			
Code	Description	CC Value Range	Representation
aa	Ring mod type	0-1	NORMAL/INTELLIGENT
b	Xover Freq	0-16	100Hz-4kHz
c	Low cut	0-10	Flat – 800Hz
d	Phaser Type	0-3	4Stage/8Stage/12Stage/BiPhase
e	Chorus	0-2	MONO/STEREO1/STEREO2
f	Compressor Type	0-7	Boss/HiBand/Light/D-comp/Orange/Fat/Mild/Stereo
g	Limiter Type	0-2	Boss/Rack 160D/VTG Rack U
h	Wah Mode	0-1	LPF/BBP
i	Wah Polarity	0-1	DOWN/UP
j	Wah Type	0-5	Cry/Vox/Fat/Light/7String/Reso
k	Lo-Mid Freq	0-27	20Hz-10kHz
l	Q	0-5	0.5/1/2/4/8/16
n	Guitar Sim Type	0-7	S->H/H->S/H->HF/S->HOLLOW/H->HOLLOW/S->AC/H->AC/P->AC
o	AC Processor Type	0-3	SMALL/MEDIUM/BRIGHT/POWER
p	Pitch shifter mode	0-3	FAST/MEDIUM/SLOW/MONO
pb	Pedal bend	0-49	-24 - +24
pt	Pan Type	0-1	Auto/Manual
q	Sub delay	0-1	MONO/PAN
r	Pitch Shifter Type	0-2	1VOICE/2VOICE MONO/2VOICE STEREO
r1	Rate by BPM	0-12	0=Whole Note, 1=Dotted Half Note, 2=Triplet of Whole Note, 3=Half Note, 4=Dotted Quarter Note, 5=Triplet of Half Note, 6=Quarter Note, 7=Dotted 8 th Note, 8=Triplet of Quarter Note, 9=8 th Note, 10=Dotted 16 th Note, 11=Triplet of 8 th Note, 12=16 th Note
t	Harmonist Type	0-1	1VOICE/2VOICE
t1	Time by BPM		0=16 th Note, 1=Triplet of 8 th Note, 2=Dotted 16 th Note, 3=8 th Note, 4= Triplet of Quarter Note, 5=Dotted 8 th Note, 6=Quarter Note
s	Pitch Shifter Pitch	0-48	-24 -> 0 -> +24
sb	S-Bend	0-6	-3oct/-2oct /-1oct /+1oct /+2oct /+3oct /+4oct
u	Harmony	0-29	-2oct, -14 th , -13 th , -12 th , -11 th , -10 th , -9 th , -1oct, -7 th , -6 th , -5 th , -4 th , -3 rd , -2 nd , Unison, +2 nd , +3 rd , +4 th , +5 th , +6 th , +7 th , +1oct, +9 th , +10 th , +11 th , +12 th +13 th , +14 th , +2oct, User
v	Master Key	0-11	C(Am), Db(Bbm), D(Bm), Eb(Cm), E(C#m), F(Dm), F#(D#m), G(Em), Ab(Fm), A(F#m), Bb(Gm), B(G#m)
z	Pattern	0-19	P1-P20
od	OD/DS Type	0-20	MID BOOST/CLEAN BOOST/TREBLE BOOST/CRUNCH/NATURAL OD WARM OD/ FAT DS/LEAD DS/METAL DS/OCT FUZZ/ BLUES OD OD-1/T-SCREAM/TURBO OD/DIST/RAT/GUV DS/DST+/METAL ZONE '60S FUZZ/MUFF FUZZ
odb	Bass OD/DS Type	0-5	MID BOOST/CLEAN BOST/TREBLE BOST/BASS OD/BASS DST/BASS MUFF
tm	Modify Type	0-7	FAT/PRESENCE/MILD/TIGHT/ENHANCE/RESONATOR1/RESONATOR2/RESONATOR3

MIDX Boss MS-3 - MIDI Implementation

Version: Feb 11 2018 V2.7

CC#2 – Bank DOWN, CC#3 – Bank UP, CC# 32 – Set Bank LSB (0-49)

PC# 00 - PC# 127 - Change Patch Number

Note: MS-3 patch number = BankLSB x 4 + PC#

PRESET CC's

RECALL/SELECT PATCH = CC# 4 (0-127)
STORE TO PATCH = CC# 5 (0-127)
STORE TO CURRENT PATCH = CC# 6 (value=127)
Note: You have to set Bank LSB to access Patch > '32-4'

FOOT VOL CC's

FOOT VOL LEVEL = CC#24 (0-127)
FOOT VOL MIN = CC#25 (0-127)
FOOT VOL MAX = CC#26 (0-127)
FOOT VOL CURVE = CC#27 (0-3 = Slow1/Slow2/Normal/Fast)

LOOP CC's

LOOP 1 ON/OFF = CC#28 (0-63 OFF, 64-127 ON)
LOOP 2 ON/OFF = CC#29 (0-63 OFF, 64-127 ON)
LOOP 3 ON/OFF = CC#30 (0-63 OFF, 64-127 ON)

NOISE GATE (NS) CC's

NOISE GATE ON/OFF = CC#20 (0-63 OFF, 64-127 ON)
NOISE GATE THRESHOLD = CC# 21 (0-127)
NOISE GATE RELEASE = CC# 22 (0-127)
NOISE GATE DETECT = CC# 23 (0-2) 0=Input, 1=NS Input, 2=FV Out

MASTER CC's

PATCH VOLUME = CC#7 (0-127)

SOLO SWITCH = CC#8 (0-63 OFF, 64-127 ON)
SOLO LEVEL = CC#9 (0-127)

MASTER EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: HIGH GAIN = CC# 12 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID FREQ = CC# 13 (0..27) 20Hz-10kHz
MASTER EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

MASTER KEY = CC# 15 (0-11) C,Db,D,Eb,E,F#,G,Ab,A,Bb,B
TAP TEMPO DELAY = CC# 16 (Measures ms. between each CC, Sets DELAY Time only)
TEMPO HOLD = CC# 19 (0-63=OFF, 64-127=ON)

GLOBAL CC's

GLOBAL VOLUME = CC#121 (0-127, 63=0dB)

GLOBAL EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: HIGH GAIN = CC# 12 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: MID FREQ = CC# 13 (0..27) 20Hz-10kHz
GLOBAL EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

BPM (Beats Per Minute)

TAP TEMPO MASTER BPM = CC# 17

(Measures ms. between each CC, Sets MASTER BPM)

MASTER BPM = CC# 18 (0-127, 0=40BPM, 127=250 BPM)

The BPM value may control the Rate or Delay Time of the following effects:

(Tip: 'Quarter Note' is a good initial setting)

DELAY TIME CC# 108

REVERB DELAY (TYPE 7) CC# 98

FX1 CC# 79 and FX2 CC# 94

SUB DELAY TIME

MOD1 CC#46 and MOD2 CC#61

CHORUS RATE, CHORUS 2X2 LO RATE, PHASER RATE, FLANGER RATE, BASS FLANGER RATE, TREMOLO RATE, PAN RATE, ROTARY SLOW RATE

MOD1 CC#47 and MOD2 CC#62

CHORUS 2X2 HI RATE

Delay CC's

DELAY ON/OFF = CC# 109 (0-63 OFF, 64-127 ON)

DELAY & DUAL D1 TIME BY BPM = CC#108

DUAL D2 TIME BY BPM = CC#120

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note, 7=Triplet of Half Note, 8=Dotted Quarter Note, 9=Half Note, 10=Triplet of Whole Note, 11=Dotted Half Note, 12=Whole Note)

CC# 110 Delay Effects	CC# 111 0-127	CC# 112 0-127 (1-2000ms)	CC# 113 0-127	CC# 114 0-127 (127=flat)	CC# 115 0-127	CC# 116 0-127	CC# 117 0-127	CC# 118 0-127	CC# 119 0-127
Single = 0	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Pan = 1	E. Level	Time	D. Level	High cut	Feedback	-	-	Tap time	-
Stereo = 2	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Dual-S = 3	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual-P = 4	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual L/R = 5	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Reverse = 6	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Analog = 7	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Tape = 8	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Modulate = 9	E. Level	Time	D. Level	High cut	Feedback	Mod. rate	Mod. depth	-	-
Tera Echo = 10	E. Level	Time	D. Level	Tone	Feedback	-	-	Hold <=63 off >=64 on	Type(0-2) 0=Mono 1=Stereo1 2=Stereo2

Reverb CC's

REVERB ON/OFF = CC# 99 (0-63 OFF, 64-127 ON)

DELAY (REVERB TYPE 7) TIME BY RPM = CC#98

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note)

CC# 100 Reverb Type	CC# 101 0-127	CC# 102 0-127 (0.1-10s)	CC# 103 0-127	CC# 104 0-127= 0-500ms	CC# 105 0-127= 0-800Hz	CC# 106 0-127= 630-12.5kHz	CC#107 0-127
Ambience = 0	Level	Time	D. Level	-	Low cut	Hi cut	-
Room = 1	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall1 = 2	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall2 = 3	Level	Time	D. Level	-	Low cut	Hi cut	-
Plate = 4	Level	Time	D. Level	-	Low cut	Hi cut	-
Spring = 5	Level	Time	D. Level	-	Low cut	Hi cut	Spring
Modulate = 6	Level	Time	D. Level	-	Low cut	Hi cut	-
Delay = 7	Level	D. Time (*)	D. Level	Feedback	-	Hi cut	-

(*) 0-170=1ms-650ms

MOD1 and MOD2

MOD1 ON/OFF = CC# 34 (0-63 OFF, 64-127 ON)

MOD2 ON/OFF = CC# 49 (0-63 OFF, 64-127 ON)

The MOD1 effects are identical with MOD2 effects. Hence the shared table.

MOD1: MOD2: Effects	CC# 35 CC# 50	CC# 36 CC# 51	CC# 37 CC# 52	CC# 38 CC# 53	CC# 39 CC# 54	CC# 40 CC# 55	CC# 41 CC# 56	CC# 42 CC# 57	CC# 43 CC# 58	CC# 44 CC# 59	CC# 45 CC# 60	CC# 46 CC# 61	CC# 47 CC# 62
	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	(*)	(*)	(*)	(*)	(*)
Chorus = 0	E. Level	Rate	D.Level	Depth	Low cut	Hi cut	Pre Delay	Mode(e)	-	-	-	Rate by BPM (r1)	-
2x2 Chorus = 1	Lo Level	Lo Rate	D.Level	Lo Depth	Hi Level	Hi Rate	Hi Depth	Lo pre del 0-127 (40ms)	Hi pre del 0-127 (40ms)	XO Freq (b)	Lo Rate by BPM (r1)	Hi Rate by BPM (r1)	
Phaser = 2	E.Level	Rate	D. Level	Depth	Reso	Manual	Step rate	Type (d)		-	Rate by BPM (r1)	Step rate by BPM (r1)	
Flanger =3	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Bass Flanger =4	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Tremolo = 5	Level	Rate	-	Depth	Wave	-	-	-	-	-	Rate by BPM (r1)	-	
Pan = 6	Level	Rate	-	Depth	Wave	Position	-	Type (pt)	-	-	Rate by BPM (r1)	-	
Rotary = 7	E.Level	Rate slow	D.Level	Depth	Rate fast	Balance	Speed sel 0-63 Slow 64-127 Fast	-	Rise time 0-127	Fall time 0-127	Rate Slow by BPM (r1)	Rate Fast by BPM (r1)	
Uni-V = 8	Level	Rate	-	Depth	-	-	-	-			Rate by BPM (r1)		
Slicer = 9	Level	Rate	D.Level	-	Trig sens	-	-	Pattern(z)	-	-	Rate by BPM (r1)	-	
Vibrato = 10	Level	Rate	-	Depth	Rise time	Trigger	-	-	-	-	Rate by BPM (r1)		
Ring mod = 11	Level	Freq	D.Level	-	-	-	-	Type(aa)	-	-			

FX1 and FX2												
FX1 ON/OFF = CC# 69 (0-63 OFF, 64-127 ON)												
FX2 ON/OFF = CC# 84 (0-63 OFF, 64-127 ON)												
The FX1 effects are identical with FX2 effects. Hence the shared table.												
FX1: CC# 70 FX2: CC# 85 Effects	CC# 71 CC# 86 0-127	CC# 72 CC# 87 0-127	CC# 73 CC# 88 0-127	CC# 74 CC# 89 0-127	CC# 75 CC# 90 0-127	CC# 76 CC# 91 0-127	CC# 77 CC# 92 0-127	CC# 78 CC# 93 (*)	CC# 79 CC# 94 (*)	CC# 80 CC# 95 (*)	CC# 81 CC# 96 (*)	CC# 82 CC# 97 (*)
Compressor = 0	Level	Sustain	-	Attack	Tone	-	-	Type (f)	-	-	-	-
Limiter = 1	Level	Ratio	-	Attack	Threshold	Release	-	Type (g)	-	-	-	-
T.Wha = 2	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Bass T. Wah = 3	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Auto Wah = 4	E.Level	Rate	D.Level	Depth	Freq	Peak	-	Mode (h)	-	-	-	-
Wah = 5	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
Bass Wah = 6	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
OD/DS = 7	E. Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (od)	-	-	-	-
Bass OD/DS = 8	E.Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (odb)	-	-	-	-
Graphic EQ = 9	Level	1kHz	-	31Hz	62Hz	125Hz	250Hz	500Hz	2kHz	4kHz	8kHz	16kHz
Param EQ = 10	Level	Lo mid gain	-	Lo gain	Hi mid gain	Hi gain	-	Lo mid f. (k)	Lo md Q (l)	Hi mid f. (m)	Hi mid Q (l)	-
AC. Guitar Sim = 11	Level	Body	-	Low	High	-	-	-	-	-	-	-
Defretter = 12	Level	Depth	D.Level	Tone	Sens	Attack	Reso	-	-	-	-	-
Sitar Sim = 13	E.Level	Depth	D.Level	Tone	Sens	Buzz	Reso	-	-	-	-	-
Slow gear = 14	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Bass Slow Gear = 15	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Octave = 16	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Bass Octave = 17	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Pitch shifter = 18	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Bass P.Shifter = 19	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Harmonist = 20	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Bass Harmonist = 21	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Overtone = 22	Upr Level	Lwr Level	D.Level	Detune	Tone	-	-	-	-	-	-	-
Pedal Bend = 23	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Bass Ped. Bend = 24	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Sound Hold = 25	E. Level	Trigger	-	Rise Time	-	-	-	-	-	-	-	-
S-Bend = 26	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Bass S-Bend = 27	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Warp = 28	Level	Trigger	-	Rise Time	Fall Time	-	-	-	-	-	-	-
Feedbacker = 29	Depth	Trigger	-	-	-	-	-	-	-	-	-	-
Sub Delay = 30	E. Level	Time	Dir level	High cut	Feedback	Tap time	-	Type(q)	Time by BPM (t1)	-	-	-

Note: Pitch Shifter Feedback parameter not implemented.

(*) Range of special parameters			
Code	Description	CC Value Range	Representation
aa	Ring mod type	0-1	NORMAL/INTELLIGENT
b	Xover Freq	0-16	100Hz-4kHz
c	Low cut	0-10	Flat – 800Hz
d	Phaser Type	0-3	4Stage/8Stage/12Stage/BiPhase
e	Chorus	0-2	MONO/STEREO1/STEREO2
f	Compressor Type	0-7	Boss/HiBand/Light/D-comp/Orange/Fat/Mild/Stereo
g	Limiter Type	0-2	Boss/Rack 160D/VTG Rack U
h	Wah Mode	0-1	LPF/BBP
i	Wah Polarity	0-1	DOWN/UP
j	Wah Type	0-5	Cry/Vox/Fat/Light/7String/Reso
k	Lo-Mid Freq	0-27	20Hz-10kHz
l	Q	0-5	0.5/1/2/4/8/16
n	Guitar Sim Type	0-7	S->H/H->S/H->HF/S->HOLLOW/H->HOLLOW/S->AC/H->AC/P->AC
o	AC Processor Type	0-3	SMALL/MEDIUM/BRIGHT/POWER
p	Pitch shifter mode	0-3	FAST/MEDIUM/SLOW/MONO
pb	Pedal bend	0-49	-24 - +24
pt	Pan Type	0-1	Auto/Manual
q	Sub delay	0-1	MONO/PAN
r	Pitch Shifter Type	0-2	1VOICE/2VOICE MONO/2VOICE STEREO
r1	Rate by BPM	0-12	0=Whole Note, 1=Dotted Half Note, 2=Triplet of Whole Note, 3=Half Note, 4=Dotted Quarter Note, 5=Triplet of Half Note, 6=Quarter Note, 7=Dotted 8 th Note, 8=Triplet of Quarter Note, 9=8 th Note, 10=Dotted 16 th Note, 11=Triplet of 8 th Note, 12=16 th Note
t	Harmonist Type	0-1	1VOICE/2VOICE
t1	Time by BPM		0=16 th Note, 1=Triplet of 8 th Note, 2=Dotted 16 th Note, 3=8 th Note, 4= Triplet of Quarter Note, 5=Dotted 8 th Note, 6=Quarter Note
s	Pitch Shifter Pitch	0-48	-24 -> 0 -> +24
sb	S-Bend	0-6	-3oct/-2oct /-1oct /+1oct /+2oct /+3oct /+4oct
u	Harmony	0-29	-2oct, -14 th , -13 th , -12 th , -11 th , -10 th , -9 th , -1oct, -7 th , -6 th , -5 th , -4 th , -3 rd , -2 nd , Unison, +2 nd , +3 rd , +4 th , +5 th , +6 th , +7 th , +1oct, +9 th , +10 th , +11 th , +12 th +13 th , +14 th , +2oct, User
v	Master Key	0-11	C(Am), Db(Bbm), D(Bm), Eb(Cm), E(C#m), F(Dm), F#(D#m), G(Em), Ab(Fm), A(F#m), Bb(Gm), B(G#m)
z	Pattern	0-19	P1-P20
od	OD/DS Type	0-20	MID BOOST/CLEAN BOOST/TREBLE BOOST/CRUNCH/NATURAL OD WARM OD/ FAT DS/LEAD DS/METAL DS/OCT FUZZ/ BLUES OD OD-1/T-SCREAM/TURBO OD/DIST/RAT/GUV DS/DST+/METAL ZONE '60S FUZZ/MUFF FUZZ
odb	Bass OD/DS Type	0-5	MID BOOST/CLEAN BOST/TREBLE BOST/BASS OD/BASS DST/BASS MUFF
tm	Modify Type	0-7	FAT/PRESENCE/MILD/TIGHT/ENHANCE/RESONATOR1/RESONATOR2/RESONATOR3

MIDX Boss MS-3 - MIDI Implementation

Version: Feb 11 2018 V2.7

CC#2 – Bank DOWN, CC#3 – Bank UP, CC# 32 – Set Bank LSB (0-49)

PC# 00 - PC# 127 - Change Patch Number

Note: MS-3 patch number = BankLSB x 4 + PC#

PRESET CC's

RECALL/SELECT PATCH = CC# 4 (0-127)
STORE TO PATCH = CC# 5 (0-127)
STORE TO CURRENT PATCH = CC# 6 (value=127)
Note: You have to set Bank LSB to access Patch > '32-4'

FOOT VOL CC's

FOOT VOL LEVEL = CC#24 (0-127)
FOOT VOL MIN = CC#25 (0-127)
FOOT VOL MAX = CC#26 (0-127)
FOOT VOL CURVE = CC#27 (0-3 = Slow1/Slow2/Normal/Fast)

LOOP CC's

LOOP 1 ON/OFF = CC#28 (0-63 OFF, 64-127 ON)
LOOP 2 ON/OFF = CC#29 (0-63 OFF, 64-127 ON)
LOOP 3 ON/OFF = CC#30 (0-63 OFF, 64-127 ON)

NOISE GATE (NS) CC's

NOISE GATE ON/OFF = CC#20 (0-63 OFF, 64-127 ON)
NOISE GATE THRESHOLD = CC# 21 (0-127)
NOISE GATE RELEASE = CC# 22 (0-127)
NOISE GATE DETECT = CC# 23 (0-2) 0=Input, 1=NS Input, 2=FV Out

MASTER CC's

PATCH VOLUME = CC#7 (0-127)

SOLO SWITCH = CC#8 (0-63 OFF, 64-127 ON)
SOLO LEVEL = CC#9 (0-127)

MASTER EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: HIGH GAIN = CC# 12 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID FREQ = CC# 13 (0..27) 20Hz-10kHz
MASTER EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

MASTER KEY = CC# 15 (0-11) C,Db,D,Eb,E,F#,G,Ab,A,Bb,B
TAP TEMPO DELAY = CC# 16 (Measures ms. between each CC, Sets DELAY Time only)
TEMPO HOLD = CC# 19 (0-63=OFF, 64-127=ON)

GLOBAL CC's

GLOBAL VOLUME = CC#121 (0-127, 63=0dB)

GLOBAL EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: HIGH GAIN = CC# 12 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: MID FREQ = CC# 13 (0..27) 20Hz-10kHz
GLOBAL EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

BPM (Beats Per Minute)

TAP TEMPO MASTER BPM = CC# 17

(Measures ms. between each CC, Sets MASTER BPM)

MASTER BPM = CC# 18 (0-127, 0=40BPM, 127=250 BPM)

The BPM value may control the Rate or Delay Time of the following effects:

(Tip: 'Quarter Note' is a good initial setting)

DELAY TIME CC# 108

REVERB DELAY (TYPE 7) CC# 98

FX1 CC# 79 and FX2 CC# 94

SUB DELAY TIME

MOD1 CC#46 and MOD2 CC#61

CHORUS RATE, CHORUS 2X2 LO RATE, PHASER RATE, FLANGER RATE, BASS FLANGER RATE, TREMOLO RATE, PAN RATE, ROTARY SLOW RATE

MOD1 CC#47 and MOD2 CC#62

CHORUS 2X2 HI RATE

Delay CC's

DELAY ON/OFF = CC# 109 (0-63 OFF, 64-127 ON)

DELAY & DUAL D1 TIME BY BPM = CC#108

DUAL D2 TIME BY BPM = CC#120

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note, 7=Triplet of Half Note, 8=Dotted Quarter Note, 9=Half Note, 10=Triplet of Whole Note, 11=Dotted Half Note, 12=Whole Note)

CC# 110 Delay Effects	CC# 111 0-127	CC# 112 0-127 (1-2000ms)	CC# 113 0-127	CC# 114 0-127 (127=flat)	CC# 115 0-127	CC# 116 0-127	CC# 117 0-127	CC# 118 0-127	CC# 119 0-127
Single = 0	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Pan = 1	E. Level	Time	D. Level	High cut	Feedback	-	-	Tap time	-
Stereo = 2	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Dual-S = 3	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual-P = 4	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual L/R = 5	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Reverse = 6	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Analog = 7	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Tape = 8	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Modulate = 9	E. Level	Time	D. Level	High cut	Feedback	Mod. rate	Mod. depth	-	-
Tera Echo = 10	E. Level	Time	D. Level	Tone	Feedback	-	-	Hold <=63 off >=64 on	Type(0-2) 0=Mono 1=Stereo1 2=Stereo2

Reverb CC's

REVERB ON/OFF = CC# 99 (0-63 OFF, 64-127 ON)

DELAY (REVERB TYPE 7) TIME BY RPM = CC#98

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note)

CC# 100 Reverb Type	CC# 101 0-127	CC# 102 0-127 (0.1-10s)	CC# 103 0-127	CC# 104 0-127= 0-500ms	CC# 105 0-127= 0-800Hz	CC# 106 0-127= 630-12.5kHz	CC#107 0-127
Ambience = 0	Level	Time	D. Level	-	Low cut	Hi cut	-
Room = 1	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall1 = 2	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall2 = 3	Level	Time	D. Level	-	Low cut	Hi cut	-
Plate = 4	Level	Time	D. Level	-	Low cut	Hi cut	-
Spring = 5	Level	Time	D. Level	-	Low cut	Hi cut	Spring
Modulate = 6	Level	Time	D. Level	-	Low cut	Hi cut	-
Delay = 7	Level	D. Time (*)	D. Level	Feedback	-	Hi cut	-

(*) 0-170=1ms-650ms

MOD1 and MOD2

MOD1 ON/OFF = CC# 34 (0-63 OFF, 64-127 ON)

MOD2 ON/OFF = CC# 49 (0-63 OFF, 64-127 ON)

The MOD1 effects are identical with MOD2 effects. Hence the shared table.

MOD1: MOD2: Effects	CC# 35 CC# 50	CC# 36 CC# 51	CC# 37 CC# 52	CC# 38 CC# 53	CC# 39 CC# 54	CC# 40 CC# 55	CC# 41 CC# 56	CC# 42 CC# 57	CC# 43 CC# 58	CC# 44 CC# 59	CC# 45 CC# 60	CC# 46 CC# 61	CC# 47 CC# 62
	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	(*)	(*)	(*)	(*)	(*)
Chorus = 0	E. Level	Rate	D.Level	Depth	Low cut	Hi cut	Pre Delay	Mode(e)	-	-	-	Rate by BPM (r1)	-
2x2 Chorus = 1	Lo Level	Lo Rate	D.Level	Lo Depth	Hi Level	Hi Rate	Hi Depth	Lo pre del 0-127 (40ms)	Hi pre del 0-127 (40ms)	XO Freq (b)	Lo Rate by BPM (r1)	Hi Rate by BPM (r1)	
Phaser = 2	E.Level	Rate	D. Level	Depth	Reso	Manual	Step rate	Type (d)		-	Rate by BPM (r1)	Step rate by BPM (r1)	
Flanger =3	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Bass Flanger =4	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Tremolo = 5	Level	Rate	-	Depth	Wave	-	-	-	-	-	Rate by BPM (r1)	-	
Pan = 6	Level	Rate	-	Depth	Wave	Position	-	Type (pt)	-	-	Rate by BPM (r1)	-	
Rotary = 7	E.Level	Rate slow	D.Level	Depth	Rate fast	Balance	Speed sel 0-63 Slow 64-127 Fast	-	Rise time 0-127	Fall time 0-127	Rate Slow by BPM (r1)	Rate Fast by BPM (r1)	
Uni-V = 8	Level	Rate	-	Depth	-	-	-	-			Rate by BPM (r1)		
Slicer = 9	Level	Rate	D.Level	-	Trig sens	-	-	Pattern(z)	-	-	Rate by BPM (r1)	-	
Vibrato = 10	Level	Rate	-	Depth	Rise time	Trigger	-	-	-	-	Rate by BPM (r1)		
Ring mod = 11	Level	Freq	D.Level	-	-	-	-	Type(aa)	-	-			

FX1 and FX2												
FX1 ON/OFF = CC# 69 (0-63 OFF, 64-127 ON)												
FX2 ON/OFF = CC# 84 (0-63 OFF, 64-127 ON)												
The FX1 effects are identical with FX2 effects. Hence the shared table.												
FX1: CC# 70 FX2: CC# 85 Effects	CC# 71 CC# 86 0-127	CC# 72 CC# 87 0-127	CC# 73 CC# 88 0-127	CC# 74 CC# 89 0-127	CC# 75 CC# 90 0-127	CC# 76 CC# 91 0-127	CC# 77 CC# 92 0-127	CC# 78 CC# 93 (*)	CC# 79 CC# 94 (*)	CC# 80 CC# 95 (*)	CC# 81 CC# 96 (*)	CC# 82 CC# 97 (*)
Compressor = 0	Level	Sustain	-	Attack	Tone	-	-	Type (f)	-	-	-	-
Limiter = 1	Level	Ratio	-	Attack	Threshold	Release	-	Type (g)	-	-	-	-
T.Wha = 2	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Bass T. Wah = 3	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Auto Wah = 4	E.Level	Rate	D.Level	Depth	Freq	Peak	-	Mode (h)	-	-	-	-
Wah = 5	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
Bass Wah = 6	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
OD/DS = 7	E. Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (od)	-	-	-	-
Bass OD/DS = 8	E.Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (odb)	-	-	-	-
Graphic EQ = 9	Level	1kHz	-	31Hz	62Hz	125Hz	250Hz	500Hz	2kHz	4kHz	8kHz	16kHz
Param EQ = 10	Level	Lo mid gain	-	Lo gain	Hi mid gain	Hi gain	-	Lo mid f. (k)	Lo md Q (l)	Hi mid f. (m)	Hi mid Q (l)	-
AC. Guitar Sim = 11	Level	Body	-	Low	High	-	-	-	-	-	-	-
Defretter = 12	Level	Depth	D.Level	Tone	Sens	Attack	Reso	-	-	-	-	-
Sitar Sim = 13	E.Level	Depth	D.Level	Tone	Sens	Buzz	Reso	-	-	-	-	-
Slow gear = 14	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Bass Slow Gear = 15	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Octave = 16	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Bass Octave = 17	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Pitch shifter = 18	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Bass P.Shifter = 19	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Harmonist = 20	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Bass Harmonist = 21	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Overtone = 22	Upr Level	Lwr Level	D.Level	Detune	Tone	-	-	-	-	-	-	-
Pedal Bend = 23	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Bass Ped. Bend = 24	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Sound Hold = 25	E. Level	Trigger	-	Rise Time	-	-	-	-	-	-	-	-
S-Bend = 26	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Bass S-Bend = 27	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Warp = 28	Level	Trigger	-	Rise Time	Fall Time	-	-	-	-	-	-	-
Feedbacker = 29	Depth	Trigger	-	-	-	-	-	-	-	-	-	-
Sub Delay = 30	E. Level	Time	Dir level	High cut	Feedback	Tap time	-	Type(q)	Time by BPM (t1)	-	-	-

Note: Pitch Shifter Feedback parameter not implemented.

(*) Range of special parameters			
Code	Description	CC Value Range	Representation
aa	Ring mod type	0-1	NORMAL/INTELLIGENT
b	Xover Freq	0-16	100Hz-4kHz
c	Low cut	0-10	Flat – 800Hz
d	Phaser Type	0-3	4Stage/8Stage/12Stage/BiPhase
e	Chorus	0-2	MONO/STEREO1/STEREO2
f	Compressor Type	0-7	Boss/HiBand/Light/D-comp/Orange/Fat/Mild/Stereo
g	Limiter Type	0-2	Boss/Rack 160D/VTG Rack U
h	Wah Mode	0-1	LPF/BBP
i	Wah Polarity	0-1	DOWN/UP
j	Wah Type	0-5	Cry/Vox/Fat/Light/7String/Reso
k	Lo-Mid Freq	0-27	20Hz-10kHz
l	Q	0-5	0.5/1/2/4/8/16
n	Guitar Sim Type	0-7	S->H/H->S/H->HF/S->HOLLOW/H->HOLLOW/S->AC/H->AC/P->AC
o	AC Processor Type	0-3	SMALL/MEDIUM/BRIGHT/POWER
p	Pitch shifter mode	0-3	FAST/MEDIUM/SLOW/MONO
pb	Pedal bend	0-49	-24 - +24
pt	Pan Type	0-1	Auto/Manual
q	Sub delay	0-1	MONO/PAN
r	Pitch Shifter Type	0-2	1VOICE/2VOICE MONO/2VOICE STEREO
r1	Rate by BPM	0-12	0=Whole Note, 1=Dotted Half Note, 2=Triplet of Whole Note, 3=Half Note, 4=Dotted Quarter Note, 5=Triplet of Half Note, 6=Quarter Note, 7=Dotted 8 th Note, 8=Triplet of Quarter Note, 9=8 th Note, 10=Dotted 16 th Note, 11=Triplet of 8 th Note, 12=16 th Note
t	Harmonist Type	0-1	1VOICE/2VOICE
t1	Time by BPM		0=16 th Note, 1=Triplet of 8 th Note, 2=Dotted 16 th Note, 3=8 th Note, 4= Triplet of Quarter Note, 5=Dotted 8 th Note, 6=Quarter Note
s	Pitch Shifter Pitch	0-48	-24 -> 0 -> +24
sb	S-Bend	0-6	-3oct/-2oct /-1oct /+1oct /+2oct /+3oct /+4oct
u	Harmony	0-29	-2oct, -14 th , -13 th , -12 th , -11 th , -10 th , -9 th , -1oct, -7 th , -6 th , -5 th , -4 th , -3 rd , -2 nd , Unison, +2 nd , +3 rd , +4 th , +5 th , +6 th , +7 th , +1oct, +9 th , +10 th , +11 th , +12 th +13 th , +14 th , +2oct, User
v	Master Key	0-11	C(Am), Db(Bbm), D(Bm), Eb(Cm), E(C#m), F(Dm), F#(D#m), G(Em), Ab(Fm), A(F#m), Bb(Gm), B(G#m)
z	Pattern	0-19	P1-P20
od	OD/DS Type	0-20	MID BOOST/CLEAN BOOST/TREBLE BOOST/CRUNCH/NATURAL OD WARM OD/ FAT DS/LEAD DS/METAL DS/OCT FUZZ/ BLUES OD OD-1/T-SCREAM/TURBO OD/DIST/RAT/GUV DS/DST+/METAL ZONE '60S FUZZ/MUFF FUZZ
odb	Bass OD/DS Type	0-5	MID BOOST/CLEAN BOST/TREBLE BOST/BASS OD/BASS DST/BASS MUFF
tm	Modify Type	0-7	FAT/PRESENCE/MILD/TIGHT/ENHANCE/RESONATOR1/RESONATOR2/RESONATOR3

MIDX Boss MS-3 - MIDI Implementation

Version: Feb 11 2018 V2.7

CC#2 – Bank DOWN, CC#3 – Bank UP, CC# 32 – Set Bank LSB (0-49)

PC# 00 - PC# 127 - Change Patch Number

Note: MS-3 patch number = BankLSB x 4 + PC#

PRESET CC's

RECALL/SELECT PATCH = CC# 4 (0-127)
STORE TO PATCH = CC# 5 (0-127)
STORE TO CURRENT PATCH = CC# 6 (value=127)
Note: You have to set Bank LSB to access Patch > '32-4'

FOOT VOL CC's

FOOT VOL LEVEL = CC#24 (0-127)
FOOT VOL MIN = CC#25 (0-127)
FOOT VOL MAX = CC#26 (0-127)
FOOT VOL CURVE = CC#27 (0-3 = Slow1/Slow2/Normal/Fast)

LOOP CC's

LOOP 1 ON/OFF = CC#28 (0-63 OFF, 64-127 ON)
LOOP 2 ON/OFF = CC#29 (0-63 OFF, 64-127 ON)
LOOP 3 ON/OFF = CC#30 (0-63 OFF, 64-127 ON)

NOISE GATE (NS) CC's

NOISE GATE ON/OFF = CC#20 (0-63 OFF, 64-127 ON)
NOISE GATE THRESHOLD = CC# 21 (0-127)
NOISE GATE RELEASE = CC# 22 (0-127)
NOISE GATE DETECT = CC# 23 (0-2) 0=Input, 1=NS Input, 2=FV Out

MASTER CC's

PATCH VOLUME = CC#7 (0-127)

SOLO SWITCH = CC#8 (0-63 OFF, 64-127 ON)
SOLO LEVEL = CC#9 (0-127)

MASTER EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: HIGH GAIN = CC# 12 (0..40) 0=-20dB, 20=0dB, 40=+20dB
MASTER EQ: MID FREQ = CC# 13 (0..27) 20Hz-10kHz
MASTER EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

MASTER KEY = CC# 15 (0-11) C,Db,D,Eb,E,F#,G,Ab,A,Bb,B
TAP TEMPO DELAY = CC# 16 (Measures ms. between each CC, Sets DELAY Time only)
TEMPO HOLD = CC# 19 (0-63=OFF, 64-127=ON)

GLOBAL CC's

GLOBAL VOLUME = CC#121 (0-127, 63=0dB)

GLOBAL EQ: LOW GAIN = CC# 10 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: MID GAIN = CC# 11 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: HIGH GAIN = CC# 12 (0..40) 0=-20dB, 20=0dB, 40=+20dB
GLOBAL EQ: MID FREQ = CC# 13 (0..27) 20Hz-10kHz
GLOBAL EQ: MID Q= CC# 14 (0..5) 0.5,1,2,4,8,16

BPM (Beats Per Minute)

TAP TEMPO MASTER BPM = CC# 17

(Measures ms. between each CC, Sets MASTER BPM)

MASTER BPM = CC# 18 (0-127, 0=40BPM, 127=250 BPM)

The BPM value may control the Rate or Delay Time of the following effects:

(Tip: 'Quarter Note' is a good initial setting)

DELAY TIME CC# 108

REVERB DELAY (TYPE 7) CC# 98

FX1 CC# 79 and FX2 CC# 94

SUB DELAY TIME

MOD1 CC#46 and MOD2 CC#61

CHORUS RATE, CHORUS 2X2 LO RATE, PHASER RATE, FLANGER RATE, BASS FLANGER RATE, TREMOLO RATE, PAN RATE, ROTARY SLOW RATE

MOD1 CC#47 and MOD2 CC#62

CHORUS 2X2 HI RATE

Delay CC's

DELAY ON/OFF = CC# 109 (0-63 OFF, 64-127 ON)

DELAY & DUAL D1 TIME BY BPM = CC#108

DUAL D2 TIME BY BPM = CC#120

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note, 7=Triplet of Half Note, 8=Dotted Quarter Note, 9=Half Note, 10=Triplet of Whole Note, 11=Dotted Half Note, 12=Whole Note)

CC# 110 Delay Effects	CC# 111 0-127	CC# 112 0-127 (1-2000ms)	CC# 113 0-127	CC# 114 0-127 (127=flat)	CC# 115 0-127	CC# 116 0-127	CC# 117 0-127	CC# 118 0-127	CC# 119 0-127
Single = 0	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Pan = 1	E. Level	Time	D. Level	High cut	Feedback	-	-	Tap time	-
Stereo = 2	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Dual-S = 3	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual-P = 4	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Dual L/R = 5	D1 E.Level	D1 Time	D. Level	D1 High cut	D1 Feedback	D2 Time	D2 Feedback	D2 High cut	D2 E.Level
Reverse = 6	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Analog = 7	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Tape = 8	E. Level	Time	D. Level	High cut	Feedback	-	-	-	-
Modulate = 9	E. Level	Time	D. Level	High cut	Feedback	Mod. rate	Mod. depth	-	-
Tera Echo = 10	E. Level	Time	D. Level	Tone	Feedback	-	-	Hold <=63 off >=64 on	Type(0-2) 0=Mono 1=Stereo1 2=Stereo2

Reverb CC's

REVERB ON/OFF = CC# 99 (0-63 OFF, 64-127 ON)

DELAY (REVERB TYPE 7) TIME BY RPM = CC#98

(0=16'th Note, 1=Triplet of 8th Note, 2=Dotted 16th Note, 3=8th Note, 4=Triplet of Quarter Note, 5=Dotted 8th Note, 6=Quarter Note)

CC# 100 Reverb Type	CC# 101 0-127	CC# 102 0-127 (0.1-10s)	CC# 103 0-127	CC# 104 0-127= 0-500ms	CC# 105 0-127= 0-800Hz	CC# 106 0-127= 630-12.5kHz	CC#107 0-127
Ambience = 0	Level	Time	D. Level	-	Low cut	Hi cut	-
Room = 1	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall1 = 2	Level	Time	D. Level	-	Low cut	Hi cut	-
Hall2 = 3	Level	Time	D. Level	-	Low cut	Hi cut	-
Plate = 4	Level	Time	D. Level	-	Low cut	Hi cut	-
Spring = 5	Level	Time	D. Level	-	Low cut	Hi cut	Spring
Modulate = 6	Level	Time	D. Level	-	Low cut	Hi cut	-
Delay = 7	Level	D. Time (*)	D. Level	Feedback	-	Hi cut	-

(*) 0-170=1ms-650ms

MOD1 and MOD2

MOD1 ON/OFF = CC# 34 (0-63 OFF, 64-127 ON)

MOD2 ON/OFF = CC# 49 (0-63 OFF, 64-127 ON)

The MOD1 effects are identical with MOD2 effects. Hence the shared table.

MOD1: MOD2: Effects	CC# 35 CC# 50	CC# 36 CC# 51	CC# 37 CC# 52	CC# 38 CC# 53	CC# 39 CC# 54	CC# 40 CC# 55	CC# 41 CC# 56	CC# 42 CC# 57	CC# 43 CC# 58	CC# 44 CC# 59	CC# 45 CC# 60	CC# 46 CC# 61	CC# 47 CC# 62
	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	(*)	(*)	(*)	(*)	(*)
Chorus = 0	E. Level	Rate	D.Level	Depth	Low cut	Hi cut	Pre Delay	Mode(e)	-	-	-	Rate by BPM (r1)	-
2x2 Chorus = 1	Lo Level	Lo Rate	D.Level	Lo Depth	Hi Level	Hi Rate	Hi Depth	Lo pre del 0-127 (40ms)	Hi pre del 0-127 (40ms)	XO Freq (b)	Lo Rate by BPM (r1)	Hi Rate by BPM (r1)	
Phaser = 2	E.Level	Rate	D. Level	Depth	Reso	Manual	Step rate	Type (d)	-	-	Rate by BPM (r1)	Step rate by BPM (r1)	
Flanger =3	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Bass Flanger =4	E.Level	Rate	D. Level	Depth	Reso	Manual	Separat	Lo cut (c)	-	-	Rate by BPM (r1)	-	
Tremolo = 5	Level	Rate	-	Depth	Wave	-	-	-	-	-	Rate by BPM (r1)	-	
Pan = 6	Level	Rate	-	Depth	Wave	Position	-	Type (pt)	-	-	Rate by BPM (r1)	-	
Rotary = 7	E.Level	Rate slow	D.Level	Depth	Rate fast	Balance	Speed sel 0-63 Slow 64-127 Fast	-	Rise time 0-127	Fall time 0-127	Rate Slow by BPM (r1)	Rate Fast by BPM (r1)	
Uni-V = 8	Level	Rate	-	Depth	-	-	-	-	-	-	Rate by BPM (r1)	-	
Slicer = 9	Level	Rate	D.Level	-	Trig sens	-	-	Pattern(z)	-	-	Rate by BPM (r1)	-	
Vibrato = 10	Level	Rate	-	Depth	Rise time	Trigger	-	-	-	-	Rate by BPM (r1)	-	
Ring mod = 11	Level	Freq	D.Level	-	-	-	-	Type(aa)	-	-	-	-	

FX1 and FX2												
FX1 ON/OFF = CC# 69 (0-63 OFF, 64-127 ON)												
FX2 ON/OFF = CC# 84 (0-63 OFF, 64-127 ON)												
The FX1 effects are identical with FX2 effects. Hence the shared table.												
FX1: CC# 70 FX2: CC# 85 Effects	CC# 71 CC# 86 0-127	CC# 72 CC# 87 0-127	CC# 73 CC# 88 0-127	CC# 74 CC# 89 0-127	CC# 75 CC# 90 0-127	CC# 76 CC# 91 0-127	CC# 77 CC# 92 0-127	CC# 78 CC# 93 (*)	CC# 79 CC# 94 (*)	CC# 80 CC# 95 (*)	CC# 81 CC# 96 (*)	CC# 82 CC# 97 (*)
Compressor = 0	Level	Sustain	-	Attack	Tone	-	-	Type (f)	-	-	-	-
Limitter = 1	Level	Ratio	-	Attack	Threshold	Release	-	Type (g)	-	-	-	-
T.Wha = 2	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Bass T. Wah = 3	E. Level	Sens	D.Level	Freq	Peak	-	-	Mode (h)	Polar (i)	-	-	-
Auto Wah = 4	E.Level	Rate	D.Level	Depth	Freq	Peak	-	Mode (h)	-	-	-	-
Wah = 5	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
Bass Wah = 6	E.Level	Ped. pos	D.Level	Ped. min	Ped. max	-	-	Type (j)	-	-	-	-
OD/DS = 7	E. Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (od)	-	-	-	-
Bass OD/DS = 8	E.Level	Drive	D.Level	Tone	Bottom	Solo Sw	Solo Level	Type (odb)	-	-	-	-
Graphic EQ = 9	Level	1kHz	-	31Hz	62Hz	125Hz	250Hz	500Hz	2kHz	4kHz	8kHz	16kHz
Param EQ = 10	Level	Lo mid gain	-	Lo gain	Hi mid gain	Hi gain	-	Lo mid f. (k)	Lo md Q (l)	Hi mid f. (m)	Hi mid Q (l)	-
AC. Guitar Sim = 11	Level	Body	-	Low	High	-	-	-	-	-	-	-
Defretter = 12	Level	Depth	D.Level	Tone	Sens	Attack	Reso	-	-	-	-	-
Sitar Sim = 13	E.Level	Depth	D.Level	Tone	Sens	Buzz	Reso	-	-	-	-	-
Slow gear = 14	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Bass Slow Gear = 15	Level	Rise time	-	Sens	-	-	-	-	-	-	-	-
Octave = 16	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Bass Octave = 17	D.Level	-1oct	-	-2oct	-	-	-	-	-	-	-	-
Pitch shifter = 18	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Bass P.Shifter = 19	Ps1:Lvl	Ps2:Lvl	D.Level	Ps1:Fine	Ps1:Pre Dly	Ps2:Fine	Ps2:Pre Dly	Type (r)	Ps1:ptch (s)	Ps2:ptch (s)	Ps1:mode(p)	Ps2:mode(p)
Harmonist = 20	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Bass Harmonist = 21	Hr1:Lvl	Hr2:Lvl	D.Level	Hr1:F-back	Hr1:Pre Dly	-	Hr2:Pre Dly	Voice (t)	Hr1:Harm (u)	Hr2:Harm (u)	Mast.key (v)	-
Overtone = 22	Upr Level	Lwr Level	D.Level	Detune	Tone	-	-	-	-	-	-	-
Pedal Bend = 23	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Bass Ped. Bend = 24	E. Level	Ped. Pos.	D. Level	-	-	-	-	Pitch (pb)	-	-	-	-
Sound Hold = 25	E. Level	Trigger	-	Rise Time	-	-	-	-	-	-	-	-
S-Bend = 26	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Bass S-Bend = 27	-	Trigger	-	Rise Time	Fall Time	-	-	Pitch(sb)	-	-	-	-
Warp = 28	Level	Trigger	-	Rise Time	Fall Time	-	-	-	-	-	-	-
Feedbacker = 29	Depth	Trigger	-	-	-	-	-	-	-	-	-	-
Sub Delay = 30	E. Level	Time	Dir level	High cut	Feedback	Tap time	-	Type(q)	Time by BPM (t1)	-	-	-

Note: Pitch Shifter Feedback parameter not implemented.

(*) Range of special parameters			
Code	Description	CC Value Range	Representation
aa	Ring mod type	0-1	NORMAL/INTELLIGENT
b	Xover Freq	0-16	100Hz-4kHz
c	Low cut	0-10	Flat – 800Hz
d	Phaser Type	0-3	4Stage/8Stage/12Stage/BiPhase
e	Chorus	0-2	MONO/STEREO1/STEREO2
f	Compressor Type	0-7	Boss/HiBand/Light/D-comp/Orange/Fat/Mild/Stereo
g	Limiter Type	0-2	Boss/Rack 160D/VTG Rack U
h	Wah Mode	0-1	LPF/BBP
i	Wah Polarity	0-1	DOWN/UP
j	Wah Type	0-5	Cry/Vox/Fat/Light/7String/Reso
k	Lo-Mid Freq	0-27	20Hz-10kHz
l	Q	0-5	0.5/1/2/4/8/16
n	Guitar Sim Type	0-7	S->H/H->S/H->HF/S->HOLLOW/H->HOLLOW/S->AC/H->AC/P->AC
o	AC Processor Type	0-3	SMALL/MEDIUM/BRIGHT/POWER
p	Pitch shifter mode	0-3	FAST/MEDIUM/SLOW/MONO
pb	Pedal bend	0-49	-24 - +24
pt	Pan Type	0-1	Auto/Manual
q	Sub delay	0-1	MONO/PAN
r	Pitch Shifter Type	0-2	1VOICE/2VOICE MONO/2VOICE STEREO
r1	Rate by BPM	0-12	0=Whole Note, 1=Dotted Half Note, 2=Triplet of Whole Note, 3=Half Note, 4=Dotted Quarter Note, 5=Triplet of Half Note, 6=Quarter Note, 7=Dotted 8 th Note, 8=Triplet of Quarter Note, 9=8 th Note, 10=Dotted 16 th Note, 11=Triplet of 8 th Note, 12=16 th Note
t	Harmonist Type	0-1	1VOICE/2VOICE
t1	Time by BPM		0=16 th Note, 1=Triplet of 8 th Note, 2=Dotted 16 th Note, 3=8 th Note, 4= Triplet of Quarter Note, 5=Dotted 8 th Note, 6=Quarter Note
s	Pitch Shifter Pitch	0-48	-24 -> 0 -> +24
sb	S-Bend	0-6	-3oct/-2oct /-1oct /+1oct /+2oct /+3oct /+4oct
u	Harmony	0-29	-2oct, -14 th , -13 th , -12 th , -11 th , -10 th , -9 th , -1oct, -7 th , -6 th , -5 th , -4 th , -3 rd , -2 nd , Unison, +2 nd , +3 rd , +4 th , +5 th , +6 th , +7 th , +1oct, +9 th , +10 th , +11 th , +12 th +13 th , +14 th , +2oct, User
v	Master Key	0-11	C(Am), Db(Bbm), D(Bm), Eb(Cm), E(C#m), F(Dm), F#(D#m), G(Em), Ab(Fm), A(F#m), Bb(Gm), B(G#m)
z	Pattern	0-19	P1-P20
od	OD/DS Type	0-20	MID BOOST/CLEAN BOOST/TREBLE BOOST/CRUNCH/NATURAL OD WARM OD/ FAT DS/LEAD DS/METAL DS/OCT FUZZ/ BLUES OD OD-1/T-SCREAM/TURBO OD/DIST/RAT/GUV DS/DST+/METAL ZONE '60S FUZZ/MUFF FUZZ
odb	Bass OD/DS Type	0-5	MID BOOST/CLEAN BOST/TREBLE BOST/BASS OD/BASS DST/BASS MUFF
tm	Modify Type	0-7	FAT/PRESENCE/MILD/TIGHT/ENHANCE/RESONATOR1/RESONATOR2/RESONATOR3