

## NOAH - Tactive Instrument Modeller



### TECHNICAL REFERENCE

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**CreamWare Datentechnik GmbH**

Wilhelm-Ostwald-Strasse 0/K1  
53721 Siegburg  
Germany

Tel.: (++49) 2241-5958-0  
Fax: (++49) 2241-5958-5  
Hotline: (++49) 2241-5958-12

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**Gesamt-Inhaltsverzeichnis**

## TECHNICAL REFERENCE

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# Noah Menus

## MIDI

### MIDI

>Instrument (Single mode) / Devices (Multi mode)

>Slot 1 - 4 (Multi mode only)

#### >Trigger1/2/3/4

TrigSrc1/2/3/4 [ Direct,Arpeg, StepSEQ ]  
TrigOut1/2/3/4 [ On, Off ]  
Transp1/2/3/4 [ -127, ..., 0, ..., 127 ]

3/4 Only in EX-Version

Trigger Source  
Trigger > Out 1/2/3/4  
Transpose 1/2/3/4

#### >Port/Ch1/2/3/4

InPort1/2/3/4 [ MIDI, USB ]  
Channel1/2/3/4 [ 1, ..., 16, omni ]  
OutPort1/2/3/4 [ MIDI, USB ]

Port/Channel 3/4 Only in EX-Version

#### >Zones1/2/3/4

LowKey1/2/3/4 [ C-2, ..., G8 ]  
HighKey1/2/3/4 [ C-2, ..., G8 ]  
LowVel1/2/3/4 [ 1, ... , 127 ]  
HighVel1/2/3/4 [ 1, ... , 127 ]

3/4 Only in EX-Version

Low Key 1/2/3/4  
High Key 1/2/3/4  
Low Velocity 1/2/3/4  
High Velocity 1/2/3/4

#### >Mixer

InPort [ MIDI, USB ]  
Channel [ 0, ... , 16 ]  
OutPort [ MIDI, USB ]

Mixer/FX 3/4 Only in EX-Version

Mixer/FX In Port  
Mixer/FX Channel 1/2/3/4  
Mixer/FX Out Port

#### >Clock

Tempo:  
BPM [ 30, ..., 120, ..., 250 ]  
BPM/100 [ 0, ..., 99 ]

#### MIDI Clock

Display only

#### >MultiView

InP [ MIDI, USB ]  
InP [ MIDI, USB ]  
InP [ MIDI, USB ]  
InP [ MIDI, USB ]  
  
Ch [ 1, 2, 3, 4, ... , 16, omni ]  
Ch [ 1, 2, 3, 4, ... , 16, omni ]  
Ch [ 1, 2, 3, 4, ... , 16, omni ]  
Ch [ 1, 2, 3, 4, ... , 16, omni ]  
  
TS [ Direct,Arpeg, StepSEQ ]  
TS [ Direct,Arpeg, StepSEQ ]  
TS [ Direct,Arpeg, StepSEQ ]  
TS [ Direct,Arpeg, StepSEQ ]  
  
Trp [ -127, ..., 0, ..., 127 ]  
Trp [ -127, ..., 0, ..., 127 ]  
Trp [ -127, ..., 0, ..., 127 ]  
Trp [ -127, ..., 0, ..., 127 ]

Multi mode only

LKey	[ <u>C</u> -2, ..., G8 ]
LKey	[ <u>C</u> -2, ..., G8 ]
LKey	[ <u>C</u> -2, ..., G8 ]
LKey	[ <u>C</u> -2, ..., G8 ]
HKey	[ C-2, ..., <u>G</u> 8 ]
HKey	[ C-2, ..., <u>G</u> 8 ]
HKey	[ C-2, ..., <u>G</u> 8 ]
HKey	[ C-2, ..., <u>G</u> 8 ]
LVel	[ <u>1</u> , ... , 127 ]
LVel	[ <u>1</u> , ... , 127 ]
LVel	[ <u>1</u> , ... , 127 ]
LVel	[ <u>1</u> , ... , 127 ]
HVel	[ 1, ... , <u>127</u> ]
HVel	[ 1, ... , <u>127</u> ]
HVel	[ 1, ... , <u>127</u> ]
HVel	[ 1, ... , <u>127</u> ]
OutP	[ MIDI, USB ]
OutP	[ MIDI, USB ]
OutP	[ MIDI, USB ]
OutP	[ MIDI, USB ]

## Mixer

### Mixer

> **Slots (Multi mode), > Instrument (Single mode)**

> **Slot 1 - Slot 4 (Multi mode)**

Volume	[ 0, ..., <u>100</u> , ..., 127 ]
Balance	[ left 64, ..., <u>center</u> , ..., right 63 ]
Mute	[ On, Off ]
Mix	[ On, Off ]

Chorus	[ 0, ..., <u>64</u> , ..., 127 ]
Delay	[ 0, ..., <u>64</u> , ..., 127 ]
Reverb	[ 0, ..., <u>64</u> , ..., 127 ]

Reset	[ Set ]	Resets Margin Display
Margin	[ -inf - 0dB ]	Display only
L	<i>Level Meter Left</i>	Display only
R	<i>Level Meter Right</i>	Display only

> **Anlg/USB**

> **Analog**

Volume	[ 0, ..., <u>100</u> , ..., 127 ]
Balance	[ left 64, ..., <u>center</u> , ..., right 63 ]
Mute	[ On, Off ]
Mix	[ On, Off ]

Chorus	[ 0, ..., <u>64</u> , ..., 127 ]
Delay	[ 0, ..., <u>64</u> , ..., 127 ]
Reverb	[ 0, ..., <u>64</u> , ..., 127 ]
Gain	[ -162, ..., <u>0</u> , ..., 24 dB ]

Reset	[ Set ]	Resets Margin Display
Margin	[ -inf - 0dB ]	Display only
L	<i>Level Meter Left</i>	Display only
R	<i>Level Meter Right</i>	Display only

## >USB

Volume	[ 0, ..., <u>100</u> , ..., 127 ]	
Balance	[ left 64, ..., <u>center</u> , ..., right 63 ]	
Mute	[ On, Off ]	
Mix	[ On, Off ]	
Chorus	[ 0, ..., <u>64</u> , ..., 127 ]	
Delay	[ 0, ..., <u>64</u> , ..., 127 ]	
Reverb	[ 0, ..., <u>64</u> , ..., 127 ]	
Gain	[ -162, ..., <u>0</u> , ..., 24 dB ]	
Reset	[ Set ]	Resets Margin Display
Margin	[ -inf - 0dB ]	Display only
L	<i>Level Meter Left</i>	Display only
R	<i>Level Meter Right</i>	Display only

## >Master

### >Aux (Aux Master Sends>Returns)

#### >Chorus

Active	[ No, Yes ]	
Send	[ 0, ..., <u>100</u> , ..., 127 ]	Chorus Send
Return	[ 0, ..., <u>100</u> , ..., 127 ]	Chorus Return

#### >Delay

Active	[ No, Yes ]	
Send	[ 0, ..., <u>100</u> , ..., 127 ]	Delay Send
Return	[ 0, ..., <u>100</u> , ..., 127 ]	Delay Return

#### >Reverb

Active	[ No, Yes ]	
Send	[ 0, ..., <u>100</u> , ..., 127 ]	Reverb Send
Return	[ 0, ..., <u>100</u> , ..., 127 ]	Reverb Return

## >Outputs

### >ADAT

ADAT 1/2	[ None, <u>Slot1</u> , Slot2, Slot3, Slot4, Analog, USB, Mix ]
ADAT 3/4	[ None, Slot1, <u>Slot2</u> , Slot3, Slot4, Analog, USB, Mix ]
ADAT 5/6	[ None, Slot1, Slot2, <u>Slot3</u> , Slot4, Analog, USB, Mix ]
ADAT 7/8	[ None, Slot1, Slot2, Slot3, <u>Slot4</u> , Analog, USB, Mix ]

### >USB

USB 1/2	[ None, <u>Slot1</u> , Slot2, Slot3, Slot4, Analog, USB, Mix ]
USB 3/4	[ None, Slot1, <u>Slot2</u> , Slot3, Slot4, Analog, USB, Mix ]
USB 5/6	[ None, Slot1, Slot2, Slot3, Slot4, Analog, USB, <u>Mix</u> ]

Analog	[ None, Slot1, Slot2, Slot3, Slot4, Analog, USB, <u>Mix</u> ]
--------	---

Headroom	[ - 186, ..., <u>-12</u> , ..., 0 dB ]	
Volume	[ 0, ..., <u>100</u> , ..., 127 ]	Master Volume

Reset	[ Set ]	Resets Margin Display
Margin	[ -inf - 0dB ]	Display only
L	<i>Level Meter Left</i>	Display only
R	<i>Level Meter Right</i>	Display only

### >MultiView

Vol	[ 0, ..., <u>100</u> , ..., 127 ]	
Vol	[ 0, ..., <u>100</u> , ..., 127 ]	
Vol	[ 0, ..., <u>100</u> , ..., 127 ]	Only EX-Version
Vol	[ 0, ..., <u>100</u> , ..., 127 ]	Only EX-Version
Bal	[ -64, ..., <u>0</u> , ..., 63 ]	
Bal	[ -64, ..., <u>0</u> , ..., 63 ]	
Bal	[ -64, ..., <u>0</u> , ..., 63 ]	Only EX-Version
Bal	[ -64, ..., <u>0</u> , ..., 63 ]	Only EX-Version
Mute	[ On, Off ]	
Mute	[ On, Off ]	
Mute	[ On, Off ]	Only EX-Version
Mute	[ On, Off ]	Only EX-Version
Mix	[ On, Off ]	
Mix	[ On, Off ]	
Mix	[ On, Off ]	Only EX-Version
Mix	[ On, Off ]	Only EX-Version
Rev	[ 0, ..., <u>64</u> , ..., 127 ]	
Rev	[ 0, ..., <u>64</u> , ..., 127 ]	
Rev	[ 0, ..., <u>64</u> , ..., 127 ]	Only EX-Version
Rev	[ 0, ..., <u>64</u> , ..., 127 ]	Only EX-Version
Del	[ 0, ..., <u>64</u> , ..., 127 ]	
Del	[ 0, ..., <u>64</u> , ..., 127 ]	
Del	[ 0, ..., <u>64</u> , ..., 127 ]	Only EX-Version
Del	[ 0, ..., <u>64</u> , ..., 127 ]	Only EX-Version
Cho	[ 0, ..., <u>64</u> , ..., 127 ]	
Cho	[ 0, ..., <u>64</u> , ..., 127 ]	
Cho	[ 0, ..., <u>64</u> , ..., 127 ]	Only EX-Version
Cho	[ 0, ..., <u>64</u> , ..., 127 ]	Only EX-Version
L R	Level Meter Left/Right	Display only
L R	Level Meter Left/Right	Display only
L R	Level Meter Left/Right	Display only Only EX-Version
L R	Level Meter Left/Right	Display only Only EX-Version

## Effects

### >FX

- >Aux FX
- >Insert 1
- >Insert 2
- >Sources

### >Aux FX

#### > Chorus

Type [ Chorus, Flanger ]  
 Rate [ 0, ..., 1, ... 40 Hz ]  
 Depth [ 0, ..., 100, ..., 127 ]  
 Feedback [ -64, ..., 0, ..., 63 ]  
 Phase [ 0, ..., 180 deg ]  
 Send [ 0, ..., ..., 127 ]  
 Return [ 0, ..., ..., 127 ]  
 Dly Send [ 0, ..., 127 ]  
 Rev Send [ 0, ..., 127 ]

#### Chorus / Flanger

Delay Send  
 Reverb Send

### >Delay

#### >Snd/Rtn

Send [ 0, ..., 127 ]  
 Return [ 0, ..., 127 ]  
 Rev Send [ 0, ..., 127 ]

#### Send / Return

#### >Delay Type

[ Dual Delay, LCR Delay, Multitap  
 Delay, Stereo Delay, Synth Delay ]

Delay Mode [ ms/Bpm ]

### Delay Types

#### >Dual Delay

Delay L	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL L	[ 1/1, .., <u>1/4</u> , ..., 1/32 trpl ]*	Note Length L (BPM-Mode)
Hi Damp L	[ 10, ..., <u>16.000</u> , ..., 24.000 Hz ]	High Damp L
Lo Damp L	[ 10, ..., <u>10</u> , ..., 24.000 Hz ]	Low Damp L
Feedb L	[ 0, ..., <u>64</u> , ..., 127 ]	Feedback L
Delay R	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL /R	[ 1/1, .., <u>1/4</u> , ..., 1/32 trpl ]*	Note Length R (BPM-Mode)
Hi Damp R	[ 10, ..., <u>16.000</u> , ..., 24.000 Hz ]	High Damp R
Lo Damp R	[ 10, ..., <u>10</u> , ..., 24.000 Hz ]	Low Damp R
Feedb R	[ 0, ..., <u>64</u> , ..., 127 ]	Feedback R

#### >LCR Delay

Delay L	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	Delay Left /Center / Right (ms-Mode)
Delay C	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	Delay Left /Center / Right (ms-Mode)
Delay R	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	Delay Left /Center / Right (ms-Mode)
NoteL L	[ 1/1, .., <u>1/4</u> , ..., 1/32 trpl ]*	Note Length L (BPM-Mode)
NoteL C	[ 1/1, .., <u>1/4</u> , ..., 1/32 trpl ]*	Note Length C (BPM-Mode)
NoteL R	[ 1/1, .., <u>1/4</u> , ..., 1/32 trpl ]*	Note Length R (BPM-Mode)
Level L	[ 0, ..., ..., <u>127</u> ]	Level Left
Level C	[ 0, ..., ..., <u>127</u> ]	Level Center
Level R	[ 0, ..., ..., <u>127</u> ]	Level Right
Lo Damp	[ 10, ..., <u>10</u> , ..., 24.000 Hz ]	Low Damp
Hi Damp	[ 0, ..., <u>16.000</u> , ..., 24.000 Hz ]	High Damp
Feedback	[ 0, ..., <u>64</u> , ..., 127 ]	

\* [1/1, 1/2 dot, 1/2, 1/2 trpl, 1/4 dot, 1/4, 1/4 trpl, 1/8 dot, 1/8, 1/8 trpl, 1/16 dot, 1/16, 1/16 trpl, 1/32, 1/32 trpl]



### >Multitap Delay

Tap 1	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL 1	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length 1 (BPM-Mode)
Level 1	[ 0, ..., ..., <u>127</u> ]	
Pan 1	[ left 64, ..., <u>center</u> , ..., right 63 ]	
Tap 2	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
Note L 2	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length 2 (BPM-Mode)
Level 2	[ 0, ..., ..., <u>127</u> ]	
Pan 2	[ left 64, ..., <u>center</u> , ..., right 63 ]	
Tap 3	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL 3	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length 3 (BPM-Mode)
Level 3	[ 0, ..., ..., <u>127</u> ]	
Pan 3	[ left 64, ..., <u>center</u> , ..., right 63 ]	
Tap 4	[ 0, ..., <u>500</u> ms ]	(ms-Mode)
NoteL 4	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length 4 (BPM-Mode)
Level 4	[ 0, ..., ..., <u>127</u> ]	
Pan 4	[ left 64, ..., <u>center</u> , ..., right 63 ]	
Lo Damp	[ 10, ..., <u>10</u> , ..., 24.000 Hz ]	Low Damp
Hi Damp	[ 0, ..., <u>16.000</u> , ..., 24.000 Hz ]	High Damp
Feedback	[ 0, ..., <u>64</u> , ...,127 ]	

### >StereoDelay

Delay L	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL L	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length L (BPM-Mode)
Delay R	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL R	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length R (BPM-Mode)
Lo Damp	[ 10, ..., <u>10</u> , ..., 24.000 Hz ]	Low Damp
Hi Damp	[ 0, ..., <u>16.000</u> , ..., 24.000 Hz ]	High Damp
Feedback	[ 0, ..., <u>64</u> , ...,127 ]	
Cross FB	[ Off, On ]	Cross Feedback

### >Synth Delay

Delay L	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL L	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length L(BPM-Mode)
Feedb L	[ 0, ..., <u>64</u> , ...,127 ]	Feedback L
Hi Damp L	[ 0, ..., <u>16.000</u> , ..., 24.000 Hz ]	High Damp L
Level L	[ 0, ..., ..., <u>127</u> ]	
Delay R	[ 0, ..., <u>500</u> , ..., 4.000 ms ]	(ms-Mode)
NoteL R	[ 1/1, .., <u>1/4</u> , .., 1/32 trpl ]*	Note Length R (BPM-Mode)
Feedb R	[ 0, ..., <u>64</u> , ...,127 ]	Feedback R
Hi Damp R	[ 0, ..., <u>16.000</u> , ..., 24.000 Hz ]	High Damp R
Level R	[ 0, ..., ..., <u>127</u> ]	
Cross FB	[ Off, On ]	Cross Feedback

\* [1/1, 1/2 dot, 1/2, 1/2 trpl, 1/4 dot, 1/4, 1/4 trpl, 1/8 dot, 1/8, 1/8 trpl, 1/16 dot, 1/16, 1/16 trpl, 1/32, 1/32 trpl]

## >Reverb

Pre Delay	[ 0, ..., 200 ms ]	
Low Cut	[ 0, ..., <u>100</u> , ..., 24.000 Hz ]	
High Cut	[ 0, ..., <u>10.000</u> , ..., 24.000 Hz ]	
Room Size	[ 0, ..., <u>64</u> , ..., 127 ]	
Rev Time	[ 0, ..., <u>64</u> , ..., 127 ]	Reverb Time
Shape	[ 0, ..., 127 ]	
HighDamp	[ 0, ..., <u>6.000</u> , ..., 24.000 Hz ]	
Send	[ 0, ..., ..., <u>127</u> ]	
Return	[ 0, ..., ..., <u>127</u> ]	

## >Insert 1 / 2

Routing	[ <u>Not Active</u> , Slot1, Slot2, Slot3, Slot4, Analog, USB, Mix ]
>Type	[ <i>Insert-Effekte</i> ]

## Insert Effects

### >Stereo EQ

Freq 1	[ 20, ..., <u>80</u> , ..., 20.000 Hz ]
Gain 1	[ -12 , ..., 0, ...,12 dB ]
Freq 2	[ 20, ..., <u>320</u> , ..., 20.000 Hz ]
Gain 2	[ -12 , ..., 0, ...,12 dB ]
Q 2	[ <u>0.7</u> , ..., 20.0 ]
Freq 3	[ 20, ..., <u>3600</u> , ..., 20.000 Hz ]
Gain 3	[ -12 , ..., 0, ...,12 dB ]
Q 3	[ <u>0.7</u> , ..., 20.0 ]
Freq 4	[ 20, ..., <u>7200</u> , ..., 20.000 Hz ]
Gain 4	[ -12 , ..., 0, ...,12 dB ]
Bypass	[ Off, On ]

### >Parametric EQ

Freq 1	[ 20, ..., <u>80</u> , ..., 20.000 Hz ]
Gain 1	[ -12 , ..., 0, ...,12 dB ]
Q 1	[ <u>0.7</u> , ..., 20.0 ]
Freq 2	[ 20, ..., <u>320</u> , ..., 20.000 Hz ]
Gain 2	[ -12 , ..., 0, ...,12 dB ]
Q 2	[ <u>0.7</u> , ..., 20.0 ]
Freq 3	[ 20, ..., <u>3600</u> , ..., 20.000 Hz ]
Gain 3	[ -12 , ..., 0, ...,12 dB ]
Q 3	[ <u>0.7</u> , ..., 20.0 ]
Freq 4	[ 20, ..., <u>7200</u> , ..., 20.000 Hz ]
Gain 4	[ -12 , ..., 0, ...,12 dB ]
Q 4	[ <u>0.7</u> , ..., 20.0 ]
Bypass	[ Off, On ]

**>Graphic EQ**

63 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]
125 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]
250 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]
500 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]

1000 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]
2000 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]
4000 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]
8000 Hz	[ -12 , ..., <u>0</u> , ..., 12 dB ]

Gain	[ 0 , ..., <u>100</u> , ..., 127 ]
Bypass	[ Off, On ]

**>Ensemble**

Rate	[ 0.01 , ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0 , ..., <u>64</u> , ..., 127 ]	
Dry	[ 0 , ..., <u>127</u> ]	Dry Level
Wet	[ 0 , ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

**>Master Chorus**

Predel L	[ <u>0</u> , ..., 100 ms ]	Predelay L
Predel R	[ <u>0</u> , ..., 100 ms ]	Predelay R
Waveform	[ Sine, Triangle ]	
Shape	[ <u>0</u> , ..., 127 ]	
Rate	[ 0.01 , ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0 , ..., <u>64</u> , ..., 127 ]	
Feedback	[ -64 , ..., <u>0</u> , ..., 63 ]	
Phase	[ <u>0</u> , ..., 180 ]	
LoDamp	[ <u>10</u> , ..., 24.000 Hz ]	Low Damp
HiDamp	[ 0 , ..., <u>24.000</u> Hz ]	High Damp
Dry	[ 0 , ..., <u>127</u> ]	Dry Level
Wet	[ 0 , ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

**>Harmonic Chorus**

Split F	[ 10 , ..., <u>360</u> , ..., 4.000 Hz ]	Split Freq
Lo Level	[ 0 , ..., <u>127</u> ]	Low Level
Hi Level	[ 0 , ..., <u>127</u> ]	High Level
Rate	[ 0.01 , ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0 , ..., <u>64</u> , ..., 127 ]	
Feedback	[ -64 , ..., <u>0</u> , ..., 63 ]	
Phase	[ <u>0</u> , ..., 180 ]	
Lo Damp	[ <u>10</u> , ..., 24.000 Hz ]	Low Damp
Hi Damp	[ 0 , ..., <u>24.000</u> Hz ]	High Damp
Dry	[ 0 , ..., <u>127</u> ]	Dry Level
Wet	[ 0 , ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >Hexa Chorus

Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Spread	[ 0, ..., <u>127</u> ]	Pan Spread
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >Triple Chorus

Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >Master Flanger

Predel L	[ <u>0</u> , ..., 100 ms ]	Predelay L
Predel R	[ <u>0</u> , ..., 100 ms ]	Predelay R
Waveform	[ Sine, Triangle ]	
Shape	[ <u>0</u> , ..., 127 ]	
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Feedback	[ -64, ..., <u>0</u> , ..., 63 ]	
Phase	[ <u>0</u> , ..., 180 ]	
LoDamp	[ <u>10</u> , ..., 24.000 Hz ]	Low Damp
HiDamp	[ 0, ..., <u>24.000</u> Hz ]	High Damp
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >Harmonic Flanger

Split F	[ 10, ..., <u>320</u> , ..., 4.000 Hz ]	Split Freq
Lo Level	[ 0, ..., <u>127</u> ]	Low Level
Hi Level	[ 0, ..., <u>127</u> ]	High Level
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Feedback	[ -64, ..., <u>0</u> , ..., 63 ]	
Phase	[ <u>0</u> , ..., 180 ]	
Lo Damp	[ <u>10</u> , ..., , 24.000 Hz ]	Low Damp
Hi Damp	[ 0, ..., <u>24.000</u> Hz ]	High Damp
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

**>Random Flanger**

Predel L	[ <u>0</u> , ..., 100 ms ]	Predelay L
Predel R	[ <u>0</u> , ..., 100 ms ]	Predelay R
Waveform	[ Step, <u>Triangle</u> , Sine ]	
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Feedback	[ -64, ..., <u>0</u> , ..., 63 ]	
PhaseInv	[ On, Off ]	Phase Invert
LoDamp	[ <u>10</u> , ..., 24.000 Hz ]	Low Damp
HiDamp	[ 0, ..., <u>24.000</u> Hz ]	High Damp
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

**>Space Flanger**

Predel L	[ <u>0</u> , ..., 100 ms ]	Predelay L
Predel R	[ <u>0</u> , ..., 100 ms ]	Predelay R
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Feedback	[ -64, ..., <u>0</u> , ..., 63 ]	
Phase	[ <u>0</u> , ..., 180 ]	
LoDamp	[ <u>10</u> , ..., 24.000 Hz ]	Low Damp
HiDamp	[ 0, ..., <u>24.000</u> Hz ]	High Damp
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

**>Step Flanger**

Waveform	[ Sine, Triangle ]	
Shape	[ <u>0</u> , ..., 127 ]	
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Feedback	[ -64, ..., <u>0</u> , ..., 63 ]	
Phase	[ <u>0</u> , ..., 180 ]	
StepRate	[ 0.25, ..., <u>2.0</u> , ..., 38 ]	Step Rate
Step Lag	[ <u>0</u> , ..., 127 ]	
LoDamp	[ <u>10</u> , ..., 24.000 Hz ]	Low Damp
HiDamp	[ 0, ..., <u>24.000</u> Hz ]	High Damp
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >Master Phaser

Type	[ 6 Stage, 12 Stage ]	
Manual	[ 10, ..., <u>100</u> , ..., 10.000 Hz ]	
Res	[ 0, ..., <u>64</u> , ..., 127 ]	Resonance
Waveform	[ Sine, Triangle ]	
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Phase	[ <u>0</u> , ..., 180 ]	
Shape	[ <u>0</u> , ..., 127 ]	
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >SSB Phaser

Shift L	[ -64, ..., <u>0</u> , ..., 63 ]	Freq Shift L
Freq L	[ -24.000, ..., 24.000 Hz ]	Frequency L (Display only)
Shift R	[ -64, ..., <u>0</u> , ..., 63 ]	Freq Shift R
Freq R	[ -24.000, ..., 24.000 Hz ]	Frequency R (Display only)
Range	[ <u>0.1</u> , ..., 100 % ]	Shift Range
Feedback	[ <u>0</u> , ..., 127 ]	
Link	[Off, On]	
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >2 Voice Pitch Shifter

Coarse A	[ -24, ..., <u>0</u> , ..., 12 ]	
Fine A	[ -100, ..., <u>0</u> , ..., 100 ]	
Level A	[ 0, ..., <u>127</u> ]	
Coarse B	[ -24, ..., <u>0</u> , ..., 12 ]	
Fine B	[ -100, ..., <u>0</u> , ..., 100 ]	
Level B	[ 0, ..., <u>127</u> ]	
Speed	[ <u>0</u> , ..., 127 ]	
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

## >Stereo Pitch Shifter

Coarse L	[ -24, ..., <u>0</u> , ..., 12 ]	
Fine L	[ -100, ..., <u>0</u> , ..., 100 ]	
Level L	[ 0, ..., <u>127</u> ]	
Coarse R	[ -24, ..., <u>0</u> , ..., 12 ]	
Fine R	[ -100, ..., <u>0</u> , ..., 100 ]	
Level R	[ 0, ..., <u>127</u> ]	
Speed	[ <u>0</u> , ..., 127 ]	
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	

### >Feedback Pitch Shifter

Coarse L [ -24, ..., 0, ..., 12 ]  
 Fine L [ -100, ..., 0, ..., 100 ]  
 Feedback [ - 64, ..., 0, ..., 63 ]  
 Speed [ 0, ..., 127 ]

Dry [ 0, ..., 127 ]  
 Wet [ 0, ..., 127 ]

Dry Level  
 Wet Level

Bypass [ Off, On ]

### >Autopan

Rate [ 0.01, ..., 1.0, ..., 40 Hz ]  
 Waveform [ Sine, Triangle ]  
 Depth [ 0, ..., 127 ]  
 Phase [ 0, ..., 180 ]

Shape [ 0, ..., 127 ]  
 Output [ 0, ..., 127 ]

Bypass [ Off, On ]

### >Tremolo

Rate [ 0.01, ..., 1.0, ..., 40 Hz ]  
 Waveform [ Sine, Triangle ]  
 Depth [ 0, ..., 127 ]  
 Phase [ 0, ..., 180 ]

Shape [ 0, ..., 127 ]

Bypass [ Off, On ]

### >Auto Wah

Cutoff [ 0, ..., 64, ..., 127 ]  
 Res [ 0, ..., 64, ..., 127 ]  
 Type [ LPF, BPF ]

Cutoff Frequency  
 Resonance  
 Filter Type

Attack [ 0, ..., 127 ]  
 Decay [ 0, ..., 127 ]  
 Depth [ 0, ..., 64, ..., 127 ]  
 Bypass [ Off, On ]

Envelope Attack  
 Envelope Decay  
 Envelope Depth

### >Amplifier

InGain [ 0, ..., 100, ..., 127 ]  
 Boost [ Off, On ]  
 Drive [ 0, ..., 100, ..., 127 ]

Input Gain

Bass [ -64, ..., 0, ..., 63 ]  
 Mid [ -64, ..., 0, ..., 63 ]  
 Treble [ -64, ..., 0, ..., 63 ]

Pre-EQ Bass  
 Pre-EQ Mid  
 Pre-EQ Treble

Bass [ -64, ..., 0, ..., 63 ]  
 Mid [ -64, ..., 0, ..., 63 ]  
 Presence [ -64, ..., 0, ..., 63 ]  
 Treble [ -64, ..., 0, ..., 63 ]

Post-EQ Bass  
 Post-EQ Mid  
 Post-EQ Presence  
 Post-EQ Treble

Post-EQ [ Off, On ]  
 Output [ 0, ..., 100, ..., 127 ]  
 Dist [ Off, On ]  
 Speaker [ Off, On ]

Distortion

Bypass [ Off, On ]

## >Decimator

SampleRate	[ 1, ..., <u>24.000</u> , ..., 48.000 Hz ]	Sample Rate
Decimate	[ On, Off ]	Decimate On/Off
Bit Depth	[ 1, ..., <u>8</u> , ..., 16 ]	
Chop	[ On, Off ]	Chop On/Off
LFO Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
LFO Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
High Damp	[ 0, ..., <u>24.000</u> Hz ]	6 dB High Damp
Bypass	[ Off, On ]	

## >Distortion

Highpass	[ 10, ..., <u>100</u> , ..., 1.000 Hz ]	Pre EQ Highpass
Drive	[ 0, ..., <u>64</u> , ..., 127 ]	
Lowpass	[ 0, ..., <u>12.000</u> , ..., 24.000 Hz ]	Post EQ Lowpass
Output	[ 0, ..., <u>100</u> , ..., 127 ]	
Bypass	[ Off, On ]	

## >Overdrive

Highpass	[ 10, ..., <u>100</u> , ..., 1.000 Hz ]	Pre EQ Highpass
Drive	[ 0, ..., <u>64</u> , ..., 127 ]	
Color	[ 0, ..., <u>64</u> , ..., 127 ]	
Output	[ 0, ..., <u>100</u> , ..., 127 ]	
Freq 1	[ 20, ..., <u>80</u> , ..., 20.000 Hz ]	
Gain 1	[ -12, ..., <u>0</u> , ..., 12 dB ]	
Q 1	[ <u>0.7</u> , ..., 20 ]	
Freq 2	[ 20, ..., <u>320</u> , ..., 20.000 Hz ]	
Gain 2	[ -12, ..., <u>0</u> , ..., 12 dB ]	
Q 2	[ <u>0.7</u> , ..., 20 ]	
Freq 3	[ 20, ..., <u>3.600</u> , ..., 20.000 Hz ]	
Gain 3	[ -12, ..., <u>0</u> , ..., 12 dB ]	
Q 3	[ <u>0.7</u> , ..., 20 ]	
Freq 4	[ 20, ..., <u>7.200</u> , ..., 20.000 Hz ]	
Gain 4	[ -12, ..., <u>0</u> , ..., 12 dB ]	
Q 4	[ <u>0.7</u> , ..., 20 ]	
EQ Byp	[ Off, On ]	EQ Bypass
Bypass	[ Off, On ]	

## >Resonator

Freq	[ 45, ..., <u>100</u> , ..., 10.000 Hz ]	Frequency
Res	[ 0, ..., <u>64</u> , ..., 127 ]	Resonance
Damp	[ <u>0</u> , ..., 127 ]	Damping
Waveform	[ Sine, Triangle ]	
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
Phase	[ <u>0</u> , ..., 180 ]	
Shape	[ <u>0</u> , ..., 127 ]	
Dry	[ 0, ..., <u>127</u> ]	Dry Level
Wet	[ 0, ..., <u>127</u> ]	Wet Level
Bypass	[ Off, On ]	



**>Ringmodulator**

Carrier F	[ 1, ..., <u>100</u> , ..., 1.000 Hz ]	Carrier Freq
Waveform	[ <u>Sine</u> , Squ, Saw Up, Saw Down, Triangle, Random ]	
Rate	[ 0.01, ..., <u>1.0</u> , ..., 40 Hz ]	LFO Rate
Depth	[ 0, ..., <u>64</u> , ..., 127 ]	LFO Depth
Env Att	[ <u>0</u> , ..., 127 ]	Env Attack
Env Dec	[ <u>0</u> , ..., 127 ]	Env Decay
Env Depth	[ 0, ..., <u>64</u> , ..., 127 ]	
RM Amt	[ 0, ..., <u>64</u> , ..., 127 ]	RM Amount
Bypass	[ Off, On ]	

**>Softclip**

Drive	[ 0, ..., <u>50</u> , ..., 100 % ]
Output	[ -186.6, ..., <u>0</u> dB ]
Bypass	[ Off, On ]

**>Stereo Expander**

Amount	[ -100, ..., <u>50</u> , ..., 100 % ]
Bypass	[ Off, On ]

**>Tube Processor**

Highpass	[ 10, ..., <u>100</u> , ..., 1.000 Hz ]	Pre EQ Highpass
Drive	[ 0, ..., <u>64</u> , ..., 127 ]	
Color	[ 0, ..., <u>64</u> , ..., 127 ]	
Lowpass	[ 0, ..., <u>12.000</u> , ..., 24.000 Hz ]	Post EQ Low
Output	[ 0, ..., <u>100</u> , ..., 127 ]	
Bypass	[ Off, On ]	

**>Compressor**

Attack	[ <u>1</u> , ..., 100 ms ]
Release	[ 1, ..., <u>200</u> , ..., 1.000 ms ]
Threshold	[ -60, ..., <u>-12</u> , ..., 0 dB ]
Ratio	[ 1.0:1, ..., <u>2.0:1</u> , ..., inf:1 ]
Gain	[ -168, ..., <u>0</u> , ..., 18 dB ]
Bypass	[ Off, On ]

**>Expander**

Attack	[ <u>1</u> , ..., 100 ms ]
Release	[ 1, ..., <u>200</u> , ..., 1.000 ms ]
Threshold	[ -60, ..., <u>-60</u> , ..., 0 dB ]
Ratio	[ 1.0:1, ..., <u>2.0:1</u> , ..., inf:1 ]
Gain	[ -168, ..., <u>0</u> , ..., 18 dB ]
Bypass	[ Off, On ]

## >Limiter

Attack [ 1, ..., 100 ms ]  
 Release [ 1, ..., 200, ..., 1.000 ms ]  
 Threshold [ -60, ..., -12, ..., 0 dB ]  
 Ratio [ 1.0:1, ..., 2.0:1, ..., inf:1 ]

Gain [ -168, ..., 0, ..., 18 dB ]

Bypass [ Off, On ]

## >Gate

Attack [ 1, ..., 100 ms ]  
 Hold [ 0, ..., 1.000 ms ]  
 Release [ 1, ..., 200, ..., 1.000 ms ]  
 Threshold [ -96, ..., -60, ..., 0 dB ]

Floor [ -96, ..., ..., 0 dB ]

Hyst [ -10, ..., 0 dB ] Hystheresis

Gain [ -168, ..., 0, ..., 18 dB ]

Bypass [ Off, On ]

## >Dynamics

### >Expander

Attack [ 1, ..., 100 ms ]  
 Release [ 1, ..., 200, ..., 1.000 ms ]  
 Threshold [ -60, ..., 0 dB ]  
 Ratio [ 1.0:1, ..., 2.0:1, ..., inf:1 ]

Gain [ -168, ..., 0, ..., 18 dB ]

Bypass [ Off, On ]

### >Comp (Compressor)

Attack [ 1, ..., 100 ms ]  
 Release [ 1, ..., 200, ..., 1.000 ms ]  
 Threshold [ -60, ..., -12, ..., 0 dB ]  
 Ratio [ 1.0:1, ..., 2.0:1, ..., inf:1 ]

Gain [ -168, ..., 0, ..., 18 dB ]

Bypass [ Off, On ]

### >Limiter

Attack [ 1, ..., 100 ms ]  
 Release [ 1, ..., 200, ..., 1.000 ms ]  
 Threshold [ -60, ..., -12, ..., 0 dB ]  
 Ratio [ 1.0:1, ..., 2.0:1, ..., inf:1 ]

Gain [ -168, ..., 0, ..., 18 dB ]

Bypass [ Off, On ]

## > Sources

Inserts: [ Multi, Slot1, Slot2, Slot3, Slot4 ]  
 Aux FX: [ Multi, Slot1, Slot2, Slot3, Slot4 ]

## System

### > MIDI

MIDIecho	[ <u>none</u> / MIDIOut / USB Out / MIDI/USB ]	MIDI In Echo
USBecho	[ <u>none</u> / MIDIOut / USB Out / MIDI/USB ]	USB In Echo
ClockSrc	[ <u>Internal</u> , MIDI In, USB In]	Clock Source
ClockOut	[On, Off]	

### >Controls

Send	[ none, <u>CC</u> , SysEx, CC/SysEx ]
Receive	[ none, <u>CC</u> , SysEx, CC/SysEx ]

### >Device

WakeUp	[ Default, Last]	
NoahID	[ 0, ..., 127 ]	
ClkSrc	[ Internal / Ext BNC ]	
Lock State	[ Locked / No Lock ]	Display only

## Utility

### >Presets

Edit presetlist of > <

>Add Bank  
(Write)  
(Back)  
(Exit)

> Del Bank (Delete Bank)  
(Delete)  
(Back)  
(Exit)

>Ren Bank (Rename Bank )  
(Write)  
(Back)  
(Exit)

>Del Pres (Delete Preset)  
(Delete)  
(Back)  
(Exit)

## FX Bypass

### >FXBypass

Ins1Byp	[ Off, On ]
Ins2Byp	[ Off, On ]
AuxByp	[ Off, On ]
Enabled	[ Enabled / Disabled ]

## Arpeggiator

### >Control

(Run/Stop)	Button	<i>First line = NoteName - Display only</i>
(Clear)	Button	<i>First line = NoteName - Display only</i>
(Hold/Hold*)	Button	<i>First line = NoteName - Display only</i>
(Htrans/Htrans*)	Button	<i>First line = NoteName - Display only</i>
(ScanDir)	Button	
(Rescan)	Button	

### >Scan

Mode	[ <u>N</u> Number /Norder ]	Scan Mode
Pattern	[ <u>F</u> orward / Reverse / Fwd-Rev / Random ]	Scan Pattern
RndDepth	[ 0, ..., <u>64</u> , ..., 100% ]	Random Depth
AutoRScn	[ Off / On ]	Auto ReScan
RscnMode	[ NewNotes / NewChords ]	ReScan Mode
RscnLen	[ 1, ..., <u>16</u> , ...128 ] Beats	ReScan Length

### >Capture

CaptMode	[ <u>N</u> ormal / Auto / Extend1 /Extend2 ]	Capture Mode
Ext2Len	[ 2, ..., <u>7</u> , ...,16 ] Beats	Extend2 length

### >Note

NoteLen	[ 8/1, 4/1, 2/1,1/1, 1/2 dot, 1/2, 1/2 trpl, 1/4 dot, 1/4, 1/4trpl, 1/8 dot, 1/8, 1/8 trpl, 1/16 dot, <u>1/16</u> , 1/16 trpl, 1/32, 1/32 trpl, 1 Clock ]	Note Length
GateDur	[ 1, ..., <u>50</u> , ..., 99 % ]	Gate Duration
On=	[ Clocks ]	Note On Width <i>Display only</i>
Off=	[ Clocks ]	Note Off Width <i>Display only</i>
VelMode	[ Original / Replace ]	Velocity Mode
LFOMod	[ 0, ..., 127 ]	LFO Modulation
MaxVel	[ 0, ..., 127 ]	Max Velocity

### >Output

OctvExt	[ 0, ..., 7 ]	Octave Extend
Repeat	[ 0, ..., 7 ]	Note Repeat
SweepTr	[ 0, ..., 127 ]	Sweep Transpose
DropNorm	[ 0, ..., 100% ]	Dropout Norm
DropAlt	[ 0, ..., 100% ]	Dropout Alt
Sw:	[ C-2, ..., G8 ]	<i>Display only</i>
RestNote	[ C-2, ..., G8 ]	Rest Note

## &gt;LFO

Waveform	[ <u>Triangle</u> / Square / SawUp / SawDown / Random ]	
> <b>Speed Type</b>	[ Clock / Freq]	SpeedType
> <b>Clock</b>		
Beats	[ <u>1</u> , ..., 128 ]	Speed Beats
Clocks	[ <u>0</u> , ..., 96 ]	Speed Clocks
> <b>Freq</b>		
Freq	[ 0.00, ..., <u>1.00</u> , ..., 2.00 Hz ]	Frequency
Phase	[ -180, ... <u>0</u> , ..., 180° ]	
<b>Resync</b>	[ ResyncOff / ResyncOn ]	
> <b>Resync</b>		
Internal	[ Off / On ]	
Manual	[ Off / On ]	
AutoReSc	[ Off / On ]	Auto Resync
NoteChrd	[ Off / On ]	Note/Chord

## &gt;KeybCtrl

CtrlBase	[ C-2, ..., <u>C1</u> , ..., G8 ]	Control Base Note
NoteTrans	[ -12, ..., <u>0</u> , ..., 12 ]	NoteTranspose
Thru	[ No / Yes ]	Thru Disabled

## &gt;OutTiming

ManClk	[ No / Yes ]	Man Clock only
Tap:	[ C-2, ..., <u>G8</u> ]	<i>Display only</i>
OffBeats	[ <u>0</u> , ..., 96 ]	Offset Beats
OffClks	[ <u>0</u> , ..., 96 ]	Offset Clocks

## Step Sequencer

## &gt;Global

StepLen	[ (') ]	Step Length
Loop	[ Off / On ]	
LoopLen	[ 1 – <u>16</u> ]	Loop Length
SignMode	[ <u>Off</u> / AutoRest / AutoStop]	Signature Mode
Signature	[ 1, ..., <u>4</u> , ..., 16 ]	Time Signature
/	[ 2 / <u>4</u> / 8 / 16 ]	Time Signature
CKey	[ C-2, ..., <u>C3</u> , ..., G8 ]	Time Signature

## &gt;Steps

Length (01 – 16)	[ <u>1</u> , ..., 96 ]	
GateD (01-16)	[ 1, ..., <u>50</u> , ..., 100 % ]	Gate Duration01 - 16
Note (01-16)	[ C-2, ..., <u>C3</u> , ..., G8]	
Vel (01-16)	[ 0, ..., <u>100</u> , ..., 127 ]	Velocity01 - 16

(') [ 8/1, 4/1, 2/1, 1/1, ½ dot, ½, ½ trpl, ¼ dot, ¼, ¼ trpl, 1/8 dot, 1/8, 1/8 trpl, 1/16 dot, 1/16, 1/16 trpl, 1/32, 1/32 trpl, 1 Clock ]

## Lightwave Parameter Structure

### >Osc

#### >Common

Coarse	[ -48, ..., <u>0</u> , ..., 47 ]
Fine	[ -99, ..., <u>0</u> , ..., 98 ]
PM Source	{ ModSource }
PM Depth	[ -64, ..., <u>0</u> , ..., 63 ]
PB Range	[ 0, 1, <u>2</u> , ..., 24 ]
PortaMode	[ <u>Off</u> , Portamento, Glissando, fing.Porta, fing.Gliss ]
PortaTime	[ <u>0</u> , ..., 127 ]
Single Mode	[ Off, On ]

#### >Osc 1

Waveform	{ Waveforms }
Coarse	[ -48, ..., <u>0</u> , ..., 47 ]
Fine	[ -99, ..., <u>0</u> , ..., 98 ]
Grunge	[ 0, ..., <u>127</u> ]
PM Source	{ ModSource }
PM Depth	[ -64, ..., <u>0</u> , ..., 63 ]

#### >Osc 2

Waveform	{ Waveforms }
Coarse	[ -48, ..., <u>0</u> , ..., 47 ]
Fine	[ -99, ..., <u>0</u> , ..., 98 ]
Grunge	[ 0, ..., <u>127</u> ]
PM Source	{ ModSource }
PM Depth	[ -64, ..., <u>0</u> , ..., 63 ]

### >Mix

#### >Osc 1

Level	[ 0, ..., <u>64</u> , ..., 127 ]	
LM Source	{ ModSource }	Level Mod Source
LM Depth	[ -64, ..., <u>0</u> , ..., 63 ]	Level Mod Depth
Balance	[ -64, ..., <u>0</u> , ..., 63 ]	
BM Source	{ ModSource }	Balance Mod Source
BM Depth	[ -64, ..., <u>0</u> , ..., 63 ]	Balance Mod Depth

#### >Osc 2

Level	[ 0, ..., <u>64</u> , ..., 127 ]	
LM Source	{ ModSource }	Level Mod Source
LM Depth	[ -64, ..., <u>0</u> , ..., 63 ]	Level Mod Depth
Balance	[ -64, ..., <u>0</u> , ..., 63 ]	
BM Source	{ ModSource }	Balance Mod Source
BM Depth	[ -64, ..., <u>0</u> , ..., 63 ]	Balance Mod Depth

Mix Gain [ 0, ..., 127 ]

### >Vcf

#### >Common

Mode	[ serial, parallel ]
Link	[ Off, On ]
CF ModS	{ ModSource }
CF ModD	[ -64, ..., <u>0</u> , ..., 63 ]
Res ModS	{ ModSource }
Res ModD	[ -64, ..., <u>0</u> , ..., 63 ]

### Oscillators

#### Common OSC

Coarse Tune	
Fine Tune	
Pitch	Mod Source
Pitch Mod Depth	

Pitch Bend Range  
Porta/Gliss Mode

Porta/Gliss Time

Coarse Tune  
Fine Tune

Pitch Mod Source  
Pitch Mod Depth

Coarse Tune  
Fine Tune

Pitch Mod Source  
Pitch Mod Depth

Level Mod Source  
Level Mod Depth

Balance Mod Source  
Balance Mod Depth

Level Mod Source  
Level Mod Depth

Balance Mod Source  
Balance Mod Depth

#### Common Vcf

Vcf Mode	
Vcf Link	

CF Mod Source  
CF Mod Depth  
Res Mod Source  
Res Mod Depth

## >Vcf 1

Filter Type	[ LPF, HPF, BPF, Thru ]	
Cutoff	[ 0, ..., <u>64</u> , ..., 127 ]	Cutoff Frequency
Res	[ <u>0</u> , ..., 127 ]	Resonance
Keyf	[ -200, ..., <u>0</u> , ..., 200 ]	Keyfollow
Env Depth	[ -64, ..., <u>0</u> , ..., 63 ]	Envelope Depth
CF1 ModS	{ ModSource }	CF1 Mod Source
CF1 ModD	[ -64, ..., <u>0</u> , ..., 63 ]	CF1 Mod Depth
Res1ModS	{ ModSource }	Res1 Mod Source
Res1ModD	[ -64, ..., <u>0</u> , ..., 63 ]	Res1 Mod Depth

## >Vcf 2

Filter Type	[ LPF, HPF, BPF, Thru ]	
Cutoff	[ 0, ..., <u>64</u> , ..., 127 ]	Cutoff Frequency
Res	[ <u>0</u> , ..., 127 ]	Resonance
Keyf	[ -200, ..., <u>0</u> , ..., 200 ]	Keyfollow
Env Depth	[ -64, ..., <u>0</u> , ..., 63 ]	Envelope Depth
CF2 ModS	{ ModSource }	CF2 Mod Source
CF2 ModD	[ -64, ..., <u>0</u> , ..., 63 ]	CF2 Mod Depth
Res2ModS	{ ModSource }	Res1 Mod Source
Res2ModD	[ -64, ..., <u>0</u> , ..., 63 ]	Res2 Mod Depth

## >Envelope

Attack	[ <u>0</u> , ..., 127 ]
Decay	[ <u>0</u> , ..., 127 ]
Sustain	[ 0, ..., <u>127</u> ]
Release	[ <u>0</u> , ..., 127 ]
Time Keyf	[ -200, ..., <u>0</u> , ..., 200 ]
Time Vel	[ -200, ..., <u>0</u> , ..., 200 ]
Level Vel	[ <u>0</u> , ..., 127 ]

## VCF Envelope

## >Amp (Amplifier)

### >Pan 1

Pan 1	[ -64, ..., <u>0</u> , ..., 63 ]	Panorama 1
Pan1ModS	{ ModSource }	Pan1 Mod Source
Pan1ModD	[ -64, ..., <u>0</u> , ..., 63 ]	Pan1 Mod Depth

### >Pan 2

Pan 2	[ -64, ..., <u>0</u> , ..., 63 ]	Panorama 2
Pan2ModS	{ ModSource }	Pan2 Mod Source
Pan2ModD	[ -64, ..., <u>0</u> , ..., 63 ]	Pan2 Mod Depth

## >Envelope

Attack	[ <u>0</u> , ..., 127 ]
Decay	[ <u>0</u> , ..., 127 ]
Sustain	[ 0, ..., <u>127</u> ]
Release	[ <u>0</u> , ..., 127 ]
Time Keyf	[ -200, ..., <u>0</u> , ..., 200 ]
Time Vel	[ -200, ..., <u>0</u> , ..., 200 ]
Level Vel	[ <u>0</u> , ..., 127 ]
Volume	[ 0, ..., 127 ]

## >Mod

### >Lfo 1

Waveform	[ Sine, Square, Saw Up, Saw Down, Triangle, Random ]	Waveform
Rate	[ 0, ..., <u>100</u> , ..., 400 Hz ]	
Retrigger	[ Off, On ]	
InitPhase	[ -180, ..., <u>0</u> , ..., 180 ]	Initial Phase
Delay	[ <u>0</u> , ..., 127 ]	Delay
Fade In	[ <u>0</u> , ..., 127 ]	Fade In
Fade Out	[ <u>0</u> , ..., 127 ]	Fade Out
Rate Keyf	[ -200, ..., <u>0</u> , ..., 200 ]	Rate Keyfollow
RateModS1	{ ModSource }	Rate Mod Source1
RateModD1	[ -64, ..., <u>0</u> , ..., 63 ]	Rate Mod Depth 1
RateModS2	{ ModSource }	Rate Mod Source2
RateModD2	[ -64, ..., <u>0</u> , ..., 63 ]	Rate Mod Depth 2
Lev ModS	{ ModSource }	Level Mod Source
Lev ModD	[ -64, ..., <u>0</u> , ..., 63 ]	Level Mod Depth
Clock	[ Off, On ]	MIDI Clock
Note	{ NoteLength }	Note Length

### >Lfo 2

Waveform	[Sine, Square, Saw Up, Saw Down, Triangle, Random ]	Waveform
Rate	[ 0, ..., <u>100</u> , ..., 400 Hz ]	
Retrigger	[ Off, On ]	
InitPhase	[ -180, ..., <u>0</u> , ..., 180 ]	Initial Phase
Delay	[ <u>0</u> , ..., 127 ]	Delay
Fade In	[ <u>0</u> , ..., 127 ]	Fade In
Fade Out	[ <u>0</u> , ..., 127 ]	Fade Out
Rate Keyf	[ -200, ..., <u>0</u> , ..., 200 ]	Rate Keyfollow
RateModS1	{ ModSource }	Rate Mod Source1
RateModD1	[ -64, ..., <u>0</u> , ..., 63 ]	Rate Mod Depth 1
RateModS2	{ ModSource }	Rate Mod Source2
RateModD2	[ -64, ..., <u>0</u> , ..., 63 ]	Rate Mod Depth 2
Lev ModS	{ ModSource }	Level Mod Source
Lev ModD	[ -64, ..., <u>0</u> , ..., 63 ]	Level Mod Depth
Clock	[ Off, On ]	MIDI Clock
Note	{ NoteLength }	Note Length

### >Free Env

Attack	[ <u>0</u> , ..., 127 ]	
Decay	[ <u>0</u> , ..., 127 ]	
Sustain	[ 0, ..., <u>127</u> ]	
Release	[ <u>0</u> , ..., 127 ]	
Time Keyf	[ -200, ..., <u>0</u> , ..., 200 ]	
Time Vel	[ -200, ..., <u>0</u> , ..., 200 ]	
Level Vel	[ <u>0</u> , ..., 127 ]	
Att Slope	[ 0, ..., <u>127</u> ]	Attack Slope
Dec Slope	[ 0, ..., <u>127</u> ]	Decay Slope

### { ModSource }

[Off, LFO1, LFO2, LFO1+2, LFO1\*2, LFO1\*MW, LFO1\*AT, LFO2\*MW, LFO2\*AT, Filter Env, Amp Env, Free Env+, Free Env-, Keyfollow, Velocity, Aftertouch, Mod.Wheel]

### { NoteLength }

[1/32 trpl, 1/32, 1/16 trpl, 1/16, 1/16 dot, 1/8 trpl, 1/8, 1/8 dot, 1/4 trpl, 1/4, 1/4 dot, 1/2 trpl, 1/2, 1/2 dot, 1/1]



## SixString (Optional)

<b>&gt;Type/Vol</b>		
GitType	[ Acoustic / Electric ]	
Main Volume	[ 0, ..., <u>100</u> , ..., 127 ]	
Level Meter		<i>Display only</i>
<b>&gt;Strings</b>		
StrngSet	[ Preset – intern/fix ]	String Set
SkipHarm	[ 1, ..., <u>70</u> ]	Skip Harmonics
BoostHrm	[ 0, ..., 10.0 ]	Boost Harmonics
Elast	[ <u>0</u> , ..., 127 ]	Elasticity
Inertia	[ <u>0</u> , ..., 127 ]	Inertia
<b>&gt;Excit</b>		
ExcLevel	[ 0, ..., <u>64</u> , ..., 127 ]	Excitation Level
Level Meter		<i>Display only</i>
ExcPos	[ 0, ..., <u>64</u> , ..., 127 ]	Excitation Pos
Vel>Pos	[ -64, ..., <u>0</u> , ..., 63 ]	Velocity>Position
<b>&gt;Pluck</b>		
Type	[ Preset ]	Pluck Type
<b>&gt;Noise</b>		
HiCut	[ 20, ..., <u>16.000</u> Hz ]	Filter High Cut
LowCut	[ <u>20</u> , ..., 16.000 Hz ]	Filter Low Cut
<b>&gt;Envelope</b>		
PlckAtt	[ 0, ..., <u>20</u> , ..., 100 ms ]	Pluck Attack
PlckDec	[ 0, ..., <u>20</u> , ..., 100 ms ]	Pluck Decay
Vel>Att	[ -64, ..., <u>0</u> , ..., 63 ]	Velocity>Attack
Vel>Dec	[ -64, ..., <u>0</u> , ..., 63 ]	Velocity>Decay
<b>&gt;Level</b>		
Global	[ 0, ..., <u>100</u> , ..., 127 ]	Global Level
Noise	[ 0, ..., <u>100</u> , ..., 127 ]	Noise Level
Vel>Nois	[ 0, ..., <u>64</u> , ..., 127 ]	Velocity>Noise
<b>&gt;Damping</b>		
Decay	[ 0, ..., <u>64</u> , ..., 127 ]	
Release	[ 0, ..., <u>64</u> , ..., 127 ]	
HDamp	[ 0, ..., <u>64</u> , ..., 127 ]	High Damp
Vel>Damp	[ -64, ..., <u>0</u> , ..., 63 ]	Velocity>Damp
<b>&gt;Microph</b>		
LinkPos	[ Off / On ]	Link Positions
PickUp1	[ 0, ..., <u>64</u> , ..., 127 ]	PickUp1 Position
PickUp2	[ 0, ..., <u>64</u> , ..., 127 ]	PickUp2 Position
Stereo	[ 0, ..., 127 ]	Stereo Spread
PUp1 Lev	[ 0, ..., <u>100</u> , ..., 127 ]	
Pup2 Lev	[ 0, ..., <u>100</u> , ..., 127 ]	
<b>&gt;Pickup</b>		
Type	[ Preset ]	Pickup Type
Active	[ Off / On ]	Pickup Active
<b>&gt;Edit</b>		
HPF	[ <u>20</u> , ..., 20.000 Hz ]	Highpass Freq
LPF	[ 20, ..., <u>20.000</u> Hz ]	Lowpass Freq
LPFRes	[ 0, ..., 127 ]	Lowpass Res

## >Body

Type	[ Preset ]	Body Type
Active	[ Off / On ]	Body Active
Relation	[ -64, ..., <u>0</u> , ..., 63 ]	
<b>&gt;Edit</b>		
Freq1	[ 20, ..., 20000 Hz ]	Resonance Freq1
Level1	[, ..., 0dB ]	Resonance Level1
Freq2	[ 20, ..., 20000 Hz ]	Resonance Freq2
Level2	[, ..., 0dB ]	Resonance Level2
Freq3	[ 20, ..., 20000 Hz ]	Resonance Freq3
Level3	[, ..., 0dB ]	Resonance Level3

## >Slap

Type	[ <u>Hard</u> 1 / Hard2 / Hard3 / Soft1 / Soft2 / Soft3 ]
Strength	[ 0, ..., <u>64</u> , ..., 127 ]
Distance	[ 0, ..., <u>64</u> , ..., 127 ]
Deflection	[ 0, ..., <u>64</u> , ..., 127 ]

## >Pitch

### >Envelope

EnvAtt	[ 0, ..., 1000 ms ]	Attack Time
EnvDec	[ 0, ..., 1000 ms ]	Decay Time
Vel>Env	[ <u>0</u> , ..., 127 ]	Velocity>Env
EnvDepth	[ <u>0</u> , ..., 127 ]	Envelope Depth
Treshold	[ 0, ..., <u>64</u> , ..., 127 ]	Threshold
TKF Key	[ C-2, ..., <u>C3</u> , ..., G8 ]	TKF Center Key
TKF Int	[ -100, ..., <u>0</u> , ..., 100 ]	TKF Intensity

### >LFO

Freq	[ 0, ..., 150 Hz ]	
AT Lev	[ <u>0</u> , ..., 127 ]	Aftertouch Level
MW Lev	[ <u>0</u> , ..., 127 ]	ModWheel Level
Gl Lev	[ <u>0</u> , ..., 127 ]	Global Level

### >Global

Coarse	[ -12, ..., <u>0</u> , ..., 12 ]	Coarse Tune
Fine	[ -100, ..., <u>0</u> , ..., 100 ]	Fine Tune
AT>Pitch	[ -12, ..., <u>0</u> , ..., 12 ]	Aftertouch>Pitch

## >Control

Single	[ Off / On ]	SingleVoice Mode
PortaMode	[ <u>Off</u> / Portamento / Glissando / FingPorta / FingGliss ]	
PortaTime	[ <u>0</u> , ..., 127 ]	Portamento Time
PW Range	[ <u>0</u> , ..., 12 ]	PitchWheelRange

## B-2003

## &gt;Pedal

16'	[ <u>0</u> , ..., <u>8</u> ]
5 1/3'	[ <u>0</u> , ..., <u>8</u> ]
8'	[ <u>0</u> , ..., <u>8</u> ]
4'	[ <u>0</u> , ..., <u>8</u> ]
2 2/3'	[ <u>0</u> , ..., <u>8</u> ]
2'	[ <u>0</u> , ..., <u>8</u> ]

## &gt;Upper

16'	[ <u>0</u> , ..., <u>8</u> ]
5 1/3'	[ <u>0</u> , ..., <u>8</u> ]
8'	[ <u>0</u> , ..., <u>8</u> ]
4'	[ <u>0</u> , ..., <u>8</u> ]
2 2/3'	[ <u>0</u> , ..., <u>8</u> ]
2'	[ <u>0</u> , ..., <u>8</u> ]
1 3/5'	[ <u>0</u> , ..., <u>8</u> ]
1/3'	[ <u>0</u> , ..., <u>8</u> ]
1'	[ <u>0</u> , ..., <u>8</u> ]

## &gt;Lower

16'	[ <u>0</u> , ..., <u>8</u> ]
5 1/3'	[ <u>0</u> , ..., <u>8</u> ]
8'	[ <u>0</u> , ..., <u>8</u> ]
4'	[ <u>0</u> , ..., <u>8</u> ]
2 2/3'	[ <u>0</u> , ..., <u>8</u> ]
2'	[ <u>0</u> , ..., <u>8</u> ]
1 3/5'	[ <u>0</u> , ..., <u>8</u> ]
1/3'	[ <u>0</u> , ..., <u>8</u> ]
1'	[ <u>0</u> , ..., <u>8</u> ]

## &gt;Perc&amp;KC

## &gt;Perc

Harmonic	[Sub, Sub-3, Fund, 1st, <u>2nd</u> , 3rd, 4th, 5th, 6th]
Level	[0, ..., <u>64</u> , ..., 127]
Decay	[0, ..., <u>64</u> , ..., 127]
On/Off	[ Off, On ]
Key Click	[0, ..., <u>64</u> , ..., 127]

## &gt;Modeling

## &gt;ToneWheel

Condition	[ <u>0</u> , ..., 127 ]
Tuning	[-1.00, ..., <u>0.00</u> , ..., 1.00]

## &gt;Drawbars

Leakage	[ <u>0</u> , ..., 127 ]
Distortion	[ <u>0</u> , ..., 127 ]

## &gt;Envelope

Attack	[ <u>0</u> , ..., 127 ]
Decay	[ <u>0</u> , ..., 127 ]
Velocity	[ Off, On ]

## Pedal

Drawbar 16'
Drawbar 5 1/3'
Drawbar 8'
Drawbar 4'
Drawbar 2 2/3'
Drawbar 2'

## Upper Manual

Drawbar 16'
Drawbar 5 1/3'
Drawbar 8'
Drawbar 4'
Drawbar 2 2/3'
Drawbar 2'
Drawbar 1 3/5'
Drawbar 1 1/3'

Drawbar 1'

## Lower Manual

Drawbar 16'
Drawbar 5 1/3'
Drawbar 8'
Drawbar 4'
Drawbar 2 2/3'
Drawbar 2'
Drawbar 1 3/5'
Drawbar 1 1/3'

Drawbar 1'

## Perc &amp; Key Click

## Percussion

Perc On/Off

## Modeling Parameters

Attack Time
Decay Time
Velocity On/Off

## >Effects

### >Vibrato

Upper	[ Off, On ]	Upper On/Off
Lower	[ Off, On ]	Lower On/Off
Type	[ <u>C</u> -1, V-1, C-2, V-2, C3, V-3 ]	

### >Drive

Drive	[ 0, ..., 127 ]	
On/Off	[ Off, On ]	Drive On/Off
Output	[ 0, ..., <u>64</u> , ..., 127 ]	
Swell	[ 0, ..., 127 ]	Swell

### >Tone

Treble	[ -12.0, ..., <u>0.0</u> ,..., 12.0 dB]
Bass	[ -12.0, ..., <u>0.0</u> ,..., 12.0 dB]

### >Rotor

#### >Horn

Slow	[ 0.00 Hz, ..., <u>0.60</u> , ..., 10.00 Hz ]	Slow Speed
Fast	[ 0.00 Hz, ..., <u>6.00</u> , ..., 20.00 Hz ]	Fast Speed
Accel	[ 0.0 sec, ..., <u>1.0</u> , ..., 30.0 sec ]	Acceleration
Brake	[ 0.0 sec, ..., <u>1.0</u> , ..., 30.0 sec ]	

Tone	[ 0, ..., <u>64</u> , ..., 127 ]	Horn Tone
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#### >Bass

Slow	[ 0.00 Hz, ..., <u>0.60</u> , ..., 10.00 Hz ]	Slow Speed
Fast	[ 0.00 Hz, ..., <u>6.00</u> , ..., 20.00 Hz ]	Fast Speed
Accel	[ 0.0 sec, ..., <u>1.0</u> , ..., 30.0 sec ]	Acceleration
Brake	[ 0.0 sec, ..., <u>1.0</u> , ..., 30.0 sec ]	

Tone	[ 0, ..., <u>64</u> , ..., 127 ]	Bass Tone
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#### >Mic

Spread	[ 0, ..., 127 ]	Microphones
Balance	[ 0, ..., 127 ]	

#### >Control

Speed	[ Slow, Fast ]	Rotor Control
On/Off	[ Off, On ]	Rotor On/Off
MW/AT Sel	[ Mod Wheel, Aftertouch ]	MW/AT Select
Threshold	[ 0, ..., <u>64</u> , ..., 127 ]	Threshold

## >External

Level[ 0, ..., 127 ]	Input Level	
Ext On/Off	[ On, Off ]	External On/Off
Ext Src	[ Slot1, Slot2, Slot3, Slot4, Analog, USB ]	External Source

## >MIDI

Pedal Ch	[ 1, 2, <u>3</u> , ..., 16, omni ]	Pedal
Lower Ch	[ 1, <u>2</u> , 3, ..., 16, omni ]	Lower Manual
Upper Ch	[ <u>1</u> , 2, 3, ..., 16, omni ]	Upper Manual
Lower Split	[ C-2, ..., <u>C3</u> , ..., G8 ]	Lower Split Key
Upper Split	[ C-2, ..., <u>C3</u> , ..., G8 ]	Upper Split Key
Pedal Oct	[ <u>-1</u> , ..., +1 ]	Pedal Octave
Lower Oct	[ <u>-1</u> , ..., +1 ]	Lower Octave
Upper Oct	[ <u>-1</u> , ..., +1 ]	Upper Octave

## MIDI

# Minimax

## Minimax

### >Osc

#### >Osc 1

Range [ LO, 32', 16', 8', 4', 2' ]  
 Waveform [ Triangle, TriSaw, Saw, Square, WideRect, NarrowRect ]

### Oscillator Bank Oscillator -1

#### >Osc 2

Range [ LO, 32', 16', 8', 4', 2' ]  
 Frequency [ -64, ..., 0, ..., 63 ]  
 Waveform [ Triangle, TriSaw, Saw, Square, WideRect, NarrowRect ]

### Oscillator -2

#### >Osc 3

Range [ LO, 32', 16', 8', 4', 2' ]  
 Frequency [ -64, ..., 0, ..., 63 ]  
 Waveform [ Triangle, SawDown, SawUp, Square, WideRect, NarrowRect ]  
 Control [ On, Off ]

### Oscillator -3

### Osc3 Control

#### >Pitch

Tune [ -64, ..., 0, ..., 63 ]  
 Osc Mod [ Off, On ]  
 Pitch AT [ -64, ..., 0, ..., 63 ]  
 PB Range [ 0, 1, 2, ... , 24 ]

Osc Modulation  
 Pitch Aftertouch  
 Pitch Bend Range

### >Mixer

#### >Osc 1-3

Osc1 Vol [ 0, ..., 64, ..., 127 ] Osc1 Volume  
 Osc2 Vol [ 0, ..., 64, ..., 127 ] Osc2 Volume  
 Osc3 Vol [ 0, ..., 64, ..., 127 ] Osc3 Volume  
 Osc1 Sw [ Off, On ] Osc1 Switch  
 Osc2 Sw [ Off, On ] Osc2 Switch  
 Osc3 Sw [ Off, On ] Osc3 Switch

#### >Noise

Noise Vol [ 0, ..., 64, ..., 127 ] Noise Volume  
 Noise Sw [ Off, On ] Noise Switch  
 Type [ White, Pink ] Noise Type

#### >External

Ext Vol [ 0, ..., 64, ..., 127 ] External Volume  
 Ext Sw [ Off, On ] External Switch  
 Feedback [ Off, On ]  
 Ext Src [ Slot1, Slot2, Slot3, Slot4, Analog, USB ] External Source

### >Filter

#### >Vcf

Cutoff [ 0, ..., 64, ..., 127 ] Cutoff Frequency  
 Emphasis [ 0, ..., 64, ..., 127 ]  
 Contour [ 0, ..., 64, ..., 127 ] Amount of Contour

#### >Envelope

Attack [ 0, ..., 127 ]  
 Decay [ 0, ..., 127 ]  
 Sustain [ 0, ..., 127 ]  
 Velocity [ 0, ..., 127 ]

### Filter Envelope

## >Mod (Modulation)

Vcf Mod	[ Off, On ]	Vcf Modulation
Vcf Kybd1	[ Off, On ]	Vcf Kybd Ctrl1
Vcf Kybd2	[ Off, On ]	Vcf Kybd Ctrl2
Vcf AT	[ -64, ..., <u>0</u> , ..., 63 ]	Vcf Aftertouch

## >Loudness

### >Amp (Amplifier)

Volume	[ 0, ..., <u>127</u> ]	
Amp AT	[ -64, ..., <u>0</u> , ..., 63 ]	Amp Aftertouch

### >Envelope (Loudness Envelope)

Attack	[ <u>0</u> , ..., 127 ]
Decay	[ <u>0</u> , ..., 127 ]
Sustain	[ 0, ..., <u>127</u> ]
Velocity	[ <u>0</u> , ..., 127 ]

## >Control (Controllers)

### >ModWheel

MW Int	[ 0, ..., <u>127</u> ]	MW Intensity
MW Offset	[ <u>0</u> , ..., 127 ]	MW
Mod Mix	[ <u>0</u> , ..., 127 ]	Modulation Mix

### >Glide

Glide Sw	[ Off, On ]	Glide Switch
Glide Time	[ <u>0</u> , ..., 127 ]	

### >TrigMode (Trigger&Modes)

Env Decay	[ Off, On ]	
Env Retrigger	[ Off, On ]	
Single	[ Off, On ]	Single Mode
Low Note	[ Off, On ]	Low Note Priority

## Vectron Player

### Vectron Player

Main Vol	[ 0, ..., <u>100</u> , ..., 127 ]	Main Volume
Cutoff	[ 0, ..., <u>100</u> , ..., 127 ]	Filter Cutoff
Res	[ 0, ..., <u>100</u> , ..., 127 ]	Filter Resonance
<b>&gt;Mod</b>		
JoyStickX	[ -64, ... <u>0</u> , ..., 63 ]	Joystick Value X
JoyStickY	[ -64, ... <u>0</u> , ..., 63 ]	Joystick Value Y
JoySRet	[ Off, On ]	Joystick Return
ModW	[ 0, ..., <u>127</u> ]	ModW Preset Val
ModWRet	[ Off, On ]	ModW Return

## Sequential Circuits™ Pro-One (Optional)

### Pro-One

#### >Osc

##### >Osc A

Octave	[ 0, 1, <u>2</u> , 3 ]	
Freq	[ <u>0</u> , ..., 127 ]	Frequency
Sync/Off	[ Off, Sync ]	Sync On/Off

Saw	[ Off, On ]	Saw Enable
Square	[ Off, On ]	Square Enable
PulsWdth	[ <u>0</u> , ..., 127 ]	Pulse Width

##### >Osc B

Octave	[ 0, 1, <u>2</u> , 3 ]	
Freq	[ <u>0</u> , ..., 127 ]	Frequency
Lofr/Nrm	[ Normal, Lofreq ]	Lofreq/Normal
Kybd/Off	[ Off, Kybd ]	Keyboard On/Off

Saw	[ Off, On ]	Saw Enable
Triangle	[ Off, On ]	Triangle Enable
Square	[ Off, On ]	Square Enable
PulsWdth	[ <u>0</u> , ..., 127 ]	Pulse Width

#### >Mixer

OscA Lev	[ 0, ..., <u>64</u> , ..., 127 ]	Osc A Level
OscB Lev	[ 0, ..., <u>64</u> , ..., 127 ]	Osc B Level
NoiseLev	[ 0, ..., <u>64</u> , ..., 127 ]	Noise/Ext Level

#### >Filter

##### >Vcf

Cutoff	[ 0, ..., <u>64</u> , ..., 127 ]	
Res	[ <u>0</u> , ..., 127 ]	Resonance
Env Amt	[ <u>0</u> , ..., 127 ]	Envelope Amount
Kybd Amt	[ <u>0</u> , ..., 127 ]	Keyboard Amount

##### >Envelope

Attack	[ <u>0</u> , ..., 127 ]	Vcf Env Attack
Decay	[ <u>0</u> , ..., 127 ]	Vcf Env Decay
Sustain	[ 0, ..., <u>127</u> ]	Vcf Env Sustain
Release	[ <u>0</u> , ..., 127 ]	Vcf Env Release

Velocity	[ <u>0</u> , ..., 127 ]	Vcf Env Velocity
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#### >Amp

##### >Envelope

Attack	[ <u>0</u> , ..., 127 ]	Amp Env Attack
Decay	[ <u>0</u> , ..., 127 ]	Amp Env Decay
Sustain	[ 0, ..., <u>127</u> ]	Amp Env Sustain
Release	[ <u>0</u> , ..., 127 ]	Amp Env Release

Velocity	[ <u>0</u> , ..., 127 ]	Amp Env Velocity
Volume	[ 0, ..., <u>64</u> , ..., 127 ]	Volume

## >Lfo

Freq	[ 0, ..., 127 ]	Frequency
Saw	[ Off, On ]	Saw Enable
Triangle	[ Off, On ]	Triangle Enable
Square	[ Off, On ]	Square Enable
Retr/Free	[ Free Run, Retrig ]	Retrig/Free Run
Phase	[ - 180°, ..., 0°, ..., 180° ]	Initial Phase
MIDI/Hz	[ Hertz, MIDI ]	MIDI/Hertz
Note Len	[ (¹) ]	Note Value

## >Mod

### >From

Fil Env	[ 0, ..., 127 ]
FE Route	[ Direct, Wheel ]
Osc B	[ 0, ..., 127 ]
OscRoute	[ Direct, Wheel ]

Lfo	[ 0, ..., 127 ]
LfoRoute	[ Direct, Wheel ]

### >To

OscA Frq	[ Direct, <u>Off</u> , Wheel ]
Osc A PW	[ Direct, <u>Off</u> , Wheel ]
OscB Frq	[ Direct, <u>Off</u> , Wheel ]
Osc B PW	[ Direct, <u>Off</u> , Wheel ]

Filter	[ Direct, <u>Off</u> , Wheel ]
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### >Wheel (Wheel Mod)

PB Range	[ 0, 1, 2, ..., 24 ]
MW Int	[ 0, ..., <u>127</u> ]
MW Offset	[ 0, ..., 127 ]

### >Aftertch (Aftertouch)

Pitch AT	[ -64, ..., 0, ..., 63 ]
AT Route	[ Osc B, <u>Osc A+B</u> , Osc B ]
Filter AT	[ -64, ..., 0, ..., 63 ]

## >Glide

Rate	[ 0, ..., 127 ]
Auto/Nrm	[ Normal/Auto ]

## >Mode

Ret/Norm	[ Normal, Retrigger ]	Retrig/Normal
Rep/Norm	[ Normal, Repeat ]	Repeat/Normal
Dron/Off	[ Off, Drone ]	Drone On/Off

## >Global

Tune	[ -5.00, ..., 0, ..., 5.00 ]	Master Tune
NotePrio	[ Last Note, Low Note ]	Note Priority
Single	[ Poly, Single ]	Single Mode
MIDI/Lfo	[ Lfo, MIDI ]	Clock Source

## >Env Fol (Env Follower)

Ext/Nois	[ Noise, External ]	External/Noise
EnvF/Off	[ Off, EnvF ]	Env F On/Off
Thresh	[ 0, ..., <u>64</u> , ..., 127 ]	Threshold
Ext Src	[ Slot1, Slot2, Slot3, Slot4, <u>Analog</u> , USB ]	External Source

## Modulation

Filter Env Amount
Filter Env Route
Osc B Amount
Osc B Route

Lfo Amount
Lfo Route

Osc A Freq
Osc A PW
Osc B Freq
Osc B PW

Filter
--------

Pitch Bend Range
MW Intensity
MW Offset

Pitch AT Amount
Pitch AT Route
Filter AT Amount

Auto/Normal
-------------

(¹) [1/1, ½ dot, ½, ½ trpl, ¼ dot, ¼, ¼ trpl, 1/8 dot, 1/8, 1/8 trpl, 1/16 dot, 1/16, 1/16 trpl, 1/32, 1/32 trpl]



## Vocoderizer

### >Analysis

#### >LPF EnvF

Attack	[ <u>1</u> , ..., 250 ms ]	LPF EnvF Attack
Release	[ 10, ..., <u>100</u> , ..., 500 ms]	LPF EnvF Release

#### >BPF EnvF

Attack	[ <u>1</u> , ..., 250 ms ]	BPF EnvF Attack
Release	[ 10, ..., <u>100</u> , ..., 500 ms]	BPF EnvF Release

#### >HPF EnvF

Attack	[ <u>1</u> , ..., 250 ms ]	HPF EnvF Attack
Release	[ 10, ..., <u>100</u> , ..., 500 ms]	HPF EnvF Release

#### >Gains

LBF Gain	[ 0 , ..., 127 ]	Lowpass Gain
BBF Gain	[ 0 , ..., 127 ]	Bandpass Gain
HBF Gain	[ 0 , ..., 127 ]	Highpass Gain

### >FiltrSet

Preset		<b>Filter Settings</b>
Selected Preset	[ Preset ]	<i>Filterset preset</i>

#### >Edit

AnalyseQ	[ 0 , ..., 127 ]	Analysis Filter Q
LinkFltQ	[ Off / On ]	Link Filter Q
SynthQ	[ 0 , ..., 127 ]	Synth Filter Q

#### >Freq

LPF Frq	[ 0 , ..., 24.000 Hz ]	<b>Frequencies</b> LPF Frequency
BPF01Frq	[ 0 , ..., 24.000 Hz ]	BPF 01 Frequency
...		
BPF20Frq	[ 0 , ..., 24.000 Hz ]	BPF 20 Frequency
HPF Frq	[ 0 , ..., 24.000 Hz ]	HPF Frequency

### >Matrix

Preset *Matrix preset*

#### >Edit

LPF	[LPF, BPF01, ..., BPF20, HPF]	LPF ctrl by
BPF01	[LPF, <u>BPF01</u> , ..., BPF20, HPF]	BPF 1 ctrl by
...		
...		
BPF20	[LPF, BPF01, ..., <u>BPF20</u> , HPF]	BPF 20 ctrl by
HPF	[LPF, BPF01, ..., BPF20, <u>HPF</u> ]	HPF ctrl by

### >Synthesis

#### >V/U Det

Type	[ Default / Easy ]	<b>VU Detection</b>
Thresh	[ , ..., 96dB – 0dB ]	Threshold
Hysth	[ 0 – 127 ]	Hystherisis
Time	[ 0.1 – 20 ms ]	

#### >UnvSource

Type [ FiltOrig / PinkNois / <u>WhitNois</u> ]	Source Type
Level [ , ..., <u>0</u> dB ]	UnvSource Level
LoCutFrq [ <u>20</u> , ..., 20.000 Hz ]	LowCut Frequency

## >Level

LPF Lev	[ 0 , ..., <u>100</u> , ..., 127 ]	LPF Level
BPF01Lev	[ 0 , ..., <u>100</u> , ..., 127 ]	BPF 01 Level
...		
...		
BPF20Lev	[ 0 , ..., <u>100</u> , ..., 127 ]	BPF 20 Level
HPF Lev	[ 0 , ..., <u>100</u> , ..., 127 ]	HPF Level

## >Pan

LPF Pan	[ -64, ..., <u>0</u> , ..., 64]
BPF01Pan	[ -64, ..., <u>0</u> , ..., 64]
...	
...	
BPF20Pan	[ -64, ..., <u>0</u> , ..., 64]
HPF Pan	[ -64, ..., <u>0</u> , ..., 64]

## >Sources

AnalysIn:		<i>Display only</i>
{Value}	[ Slot1 / Slot2 / Slot3 / Slot4 Analog / USB ]	
SynthIn:		<i>Display only</i>
{Value}	[ Slot1 / Slot2 / Slot3 / Slot4 Analog /USB ]	

## >InGainAn

InGain	[ , ..., <u>0</u> , ..., 24 dB ]	<b>Analysis</b>
Meter		Analyse In Gain
Margin	[ dB ]	<i>Display only</i>
Reset	[ Set ]	AnalyseIn Margin
		Reset Margin Anl

## >InGainSy

InGainSy	[ , ..., <u>0</u> , ..., 24 dB]	<b>Synthesis</b>
Meter		Synthese In Gain
Margin	[ dB ]	<i>Display only</i>
Reset	[ Set ]	SynthesisIn Margin
		Reset Margin Syl

## >Output

MasterVol	[ 0 , ..., 127 ]	
Meter		<i>Display only</i>
Margin	[ dB ]	Margin Out
Reset	[ Set ]	Reset Margin Out

# Interpole

## >Channel 1 / >Channel 2

### >Env

Bypass	[ Effect, Bypass ]
Input	[ Internal, External ]
Gate	[ Envelope, Gate ]
Trigger	[ Sens, MIDI ]
Sens	[ 0, ... , <u>64</u> , ..., 127 ]
Attack	[ 0, ... , 127 ]
Decay	[ 0, ... , 127 ]
Sustain	[ 0, ... , <u>127</u> ]
Release	[ Off, On ]

### Envelope

Bypass/Effect  
Input Ext/Int  
Gate Mode  
Trigger Mode

Sensitivity

### >LFO

Sync	[ Off, MIDI ]	Sync Mode
Note Len	[ <u>1/1</u> , 1/2dot, 1/2, 1/2trpl, 1/4dot, 1/4, 1/4trpl, 1/8dot, 1/8, 1/8trpl, 1/16dot, 1/16, 1/16trpl, 1/32, 1/32trpl ]	Note Length
Retrig	[ Off, MIDI ]	Retrigger Mode
Phase	[ -180, ... , 180 deg ]	Initial Phase
EnvSweep	[ -64, ..., <u>0</u> , ..., 63 ]	Envelope Sweep
Rate	[ 0.01, ... , <u>10</u> , ..., 100.00 Hz ]	
Waveform	[ <u>Sine</u> , Square, Saw Up, Saw Down, Triangle Random ]	
VCF	[ 0, ... , 127 ]	VCF Modulation
VCA	[ 0, ... , 127 ]	VCA Modulation

### >Filter

Drive	[ -64, ..., <u>0</u> , ..., 63 ]	
EnvSweep	[ -64, ..., <u>0</u> , ..., 63 ]	Envelope Sweep
Cutoff	[ 0, ... , <u>64</u> , ..., 127 ]	
Res	[ <u>0</u> , ... , 127 ]	Resonance
VCA	[ Out, In ]	VCA Mode

### >Link

Link LFO	[ Off, On ]	
LinkMode	[ Normal, Inverse ]	LFO Link Mode
Link Env	[ Off, On ]	Link Envelope
Link Fil	[ Off, On ]	Link Filter

### >Sources

Source Select

Input	[ Slot1, Slot2, Slot3, Slot4, <u>Analog</u> , USB ]	
External	[ Slot1, Slot2, Slot3, Slot4, <u>Analog</u> , USB ]	
Bypass	[ Off, On ]	Bypass All

## Devices

B-2003

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	Bank Select	0 - 127
1	0 - 127	Modulation	0 - 127
2	not used	Breath	not used
3	not used	undefined	not used
4	0 - 127	Output	0 - 127
5	not used	Portamento Time	not used
6	not used	Data Entry	not used
7	0 - 127	Volume (Mixer)	0 - 127
8	not used	Balance	not used
9	not used	undefined	not used
10	0 - 127	Pan (Mixer)	left 64 - right 63
11	0 - 127	Swell	0 - 127
12	-	Pedal 16'	8 - 0
13	-	Pedal 5 1/3'	8 - 0
14	-	Pedal 8'	8 - 0
15	-	Pedal 4'	8 - 0
16	-	Pedal 2 2/3'	8 - 0
17	-	Pedal 2'	8 - 0
18	-	Lower 16'	8 - 0
19	-	Lower 5 1/3'	8 - 0
20	-	Lower 8'	8 - 0
21	-	Lower 4'	8 - 0
22	-	Lower 2 2/3'	8 - 0
23	-	Lower 2'	8 - 0
24	-	Lower 1 3/5'	8 - 0
25	-	Lower 1 1/3'	8 - 0
26	-	Lower 1'	8 - 0
27	-	Upper 16'	8 - 0
28	-	Upper 5 1/3'	8 - 0
29	-	Upper 8'	8 - 0
30	-	Upper 4'	8 - 0
31	-	Upper 2 2/3'	8 - 0
32	0 - 127	Bank Select LSB	0 - 127
33	-	Upper 2'	8 - 0
34	-	Upper 1 3/5'	8 - 0
35	-	Upper 1 1/3'	8 - 0
36	-	Upper 1'	8 - 0
37	-	Perc Harmonic	Sub, Sub-3, Fund, 1st, 2nd, 3rd, 4th, 5th, 6th
38	0 - 127	Perc Level	0 - 127
39	0 - 127	Perc Decay	0 - 127
40	-	Perc On/Off	Off/On
41	0 - 127	Key Click	0 - 127
42	0 - 127	Condition	0 - 127
43	0 - 127	Tuning	-1.00 - +1.00
44	0 - 127	Leakage	0 - 127
45	0 - 127	Distortion	0 - 127
46	0 - 127	Attack	0 - 127
47	0 - 127	Decay	0 - 127
48	-	Velocity On/Off	Off/On
49	-	Vibrato Upper On/Off	Off/On
50	-	Vibrato Lower On/Off	Off/On
51	-	Vibrato Type	C-1,V-1,C-2,V-2,C-3,V-3
52	0 - 127	Drive	0 - 127
53	-	Drive On/Off	Off/On
54	0 - 127	Tone Treble	-12.0 dB - +12.0 dB
55	0 - 127	Bass Treble	-12.0 dB - +12.0 dB
56	not used	undefined	not used
57	not used	undefined	not used
58	not used	undefined	not used
59	not used	undefined	not used
60	not used	undefined	not used
61	not used	undefined	not used
62	not used	undefined	not used
63	not used	undefined	not used
64	0 - 127	Sustain Pedal	Off,On

65	not used	<i>Portamento</i>	not used
66	not used	<i>Sostenuto</i>	not used
67	not used	<i>Soft Pedal</i>	not used
68	not used	<i>Legato Footswitch</i>	not used
69	not used	<i>Hold Pedal</i>	not used
70	0 - 127	Horn Slow Speed	0.00 Hz-10.00 Hz
71	0 - 127	Horn Fast Speed	0.00 Hz-20.00 Hz
72	0 - 127	Horn Acceleration	0.0 sec - 30.0 sec
73	0 - 127	Horn Brake	0.0 sec - 30.0 sec
74	0 - 127	Horn Tone	0 - 127
75	0 - 127	Bass Slow Speed	0.00 Hz-10.00 Hz
76	0 - 127	Bass Fast Speed	0.00 Hz-20.00 Hz
77	0 - 127	Bass Acceleration	0.0 sec-30.0 sec
78	0 - 127	Bass Brake	0.0 sec-30.0 sec
79	0 - 127	Bass Tone	0 - 127
80	0 - 127	Spread	0 - 127
81	0 - 127	Balance	-64 - +63
82	-	Rotor Speed	Slow, Fast
83	-	Rotor On/Off	Off/On
84	-	MW/AT Select	Mod Wheel, Aftertouch
85	0 - 127	Threshold	0 - 127
86	0 - 127	External Input Level	0 - 127
87	-	External On/Off	Off/On
88	-	External Source	Slot1-4, Analog, USB
89	0 - 127	Lower Split Key	C-2 - G8
90	0 - 127	Upper Split Key	C-2 - G8
91	-	Pedal Octave	-1, 0, +1
92	-	Lower Octave	-1, 0, +1
93	-	Upper Octave	-1, 0, +1
..			
..			
120	not used	<i>All Sound Off</i>	Immediate silence
121	not used	<i>Reset All Controllers</i>	Voices fade out normally
122	not used	<i>Local Control Off</i>	not used
123	not used	<i>All Notes Off</i>	Voices fade out normally
124	not used	<i>Omni Off</i>	not used
125	not used	<i>Omni On</i>	not used
126	not used	<i>Mono On</i>	not used
127	not used	<i>Poly On</i>	not used

## Lightwave

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	<i>Bank Select</i>	0 - 127
1	not used	<i>Modulation</i>	not used
2	not used	<i>Breath</i>	not used
3	0,6,10,...	PB Range	0-24
4	0 - 127	Mix Gain	0 - 127
5	0 - 127	Portamento Time	0 - 127
6	not used	<i>Data Entry</i>	not used
7	0 - 127	Volume (Mixer)	0 - 127
8	not used	<i>Balance</i>	not used
9	not used	<i>undefined</i>	not used
10	0 - 127	Pan (Mixer)	left 64 - right 63
11	0 - 127	Volume	0 - 127
12	0 - 127	Common Osc Coarse	-48 - +47
13	0 - 127	Common Osc Fine	-99 - +98
14	0,8,15,...	Common Osc PM Source	Off,LFO1,LFO2,...
15	0 - 127	Common Osc PM Depth	-64 - +63
16	0 - 127	Osc1 Waveform	0 - 127
17	0 - 127	Osc1 Coarse	-48 - +47
18	0 - 127	Osc1 Fine	-99 - +98
19	0 - 127	Osc1 Grunge	0 - 127
20	0,8,15,...	Osc1 PM Source	Off,LFO1,LFO2,...
21	0 - 127	Osc1 PM Depth	-64 - +63
22	0 - 127	Osc2 Waveform	0 - 127
23	0 - 127	Osc2 Coarse	-48 - +47
24	0 - 127	Osc2 Fine	-99 - +98
25	0 - 127	Osc2 Grunge	0 - 127
26	0,8,15,...	Osc2 PM Source	Off,LFO1,LFO2,...
27	0 - 127	Osc2 PM Depth	-64 - +63
28	0 - 127	Osc1 Level	0 - 127
29	0,8,15,...	Osc1 Level Mod Source	Off,LFO1,LFO2,...
30	0 - 127	Osc1 Level Mod Depth	-64 - +63
31	0 - 127	Osc1 Balance	-64 - +63
32	0 - 127	<i>Bank Select</i>	0 - 127
33	0,8,15,...	Osc2 Balance Mod Source	Off,LFO1,LFO2,...
34	0 - 127	Osc2 Balance Mod Depth	-64 - +63
35	0 - 127	Osc2 Level	0 - 127
36	0,8,15,...	Osc2 Level Mod Source	Off,LFO1,LFO2,...
37	0 - 127	Osc2 Level Mod Depth	-64 - +63
38	0 - 127	Osc2 Balance	-64 - +63
39	0,8,15,...	Osc2 Balance Mod Source	Off,LFO1,LFO2,...
40	0 - 127	Osc2 Balance Mod Depth	-64 - +63
41	0/64	Vcf Mode	serial,parallel
42	0/64	Vcf Link	Off,On
43	0,8,15,...	CF Mod Source	Off,LFO1,LFO2,...
44	0 - 127	CF Mod Depth	-64 - +63
45	0,8,15,...	Res Mod Source	Off,LFO1,LFO2,...
46	0 - 127	Res Mod Depth	-64 - +63
47	0,33,65,...	Vcf1 Type	Lpf,Hpf,Bpf,Thru
48	0 - 127	Vcf1 Cutoff	0 - 127
49	0 - 127	Vcf1 Resonance	0 - 127
50	0 - 127	Vcf1 Keyfollow	-200 - +200
51	0 - 127	Vcf1 Env Depth	-64 - +63
52	0,8,15,...	Vcf1 CF Mod Source	Off,LFO1,LFO2,...
53	0 - 127	Vcf1 CF Mod Depth	-64 - +63
54	0,8,15,...	Vcf1 Res Mod Source	Off,LFO1,LFO2,...
55	0 - 127	Vcf1 Res Mod Depth	-64 - +63
56	0,33,65,...	Vcf2 Type	Lpf,Hpf,Bpf,Thru
57	0 - 127	Vcf2 Cutoff	0 - 127
58	0 - 127	Vcf2 Resonance	0 - 127
59	0 - 127	Vcf2 Keyfollow	-200 - +200
60	0 - 127	Vcf2 Env Depth	-64 - +63
61	0,8,15,...	Vcf2 CF Mod Source	Off,LFO1,LFO2,...
62	0 - 127	Vcf2 CF Mod Depth	-64 - +63
63	0,8,15,...	Vcf2 Res Mod Source	Off,LFO1,LFO2,...
64	0 - 127	<i>Sustain Pedal</i>	Off,On

65	0,27,52,...	Portamento	Off, Portamento, Glissando, fing.Porta, fing.Gliss
66	0 - 127	Vcf2 Res Mod Depth	-64 - +63
67	0 - 127	Vcf Env Attack	0 - 127
68	0/64	Single Mode	Off,On
69	0 - 127	Vcf Env Decay	0 - 127
70	0 - 127	Vcf Env Sustain	0 - 127
71	0 - 127	Vcf Env Release	0 - 127
72	0 - 127	Vcf Env TKF	-200 - +200
73	0 - 127	Vcf Env TVel	-200 - +200
74	0 - 127	Vcf Env LVel	-64 - +63
75	0 - 127	Pan1	-64 - +63
76	0,8,15,...	Pan1 Mod Source	Off,LFO1,LFO2,...
77	0 - 127	Pan1 Mod Depth	-64 - +63
78	0 - 127	Pan2	-64 - +63
79	0,8,15,...	Pan2 Mod Source	Off,LFO1,LFO2,...
80	0 - 127	Pan2 Mod Depth	-64 - +63
81	0 - 127	Amp Env Attack	0 - 127
82	0 - 127	Amp Env Decay	0 - 127
83	0 - 127	Amp Env Sustain	0 - 127
84	0 - 127	Amp Env Release	0 - 127
85	0 - 127	Amp Env TKF	-200 - +200
86	0 - 127	Amp Env TVel	-200 - +200
87	0 - 127	Amp Env LVel	-64 - +63
88	0,22,43...	Lfo1 Waveform	Sine,Square,Saw Up,Saw Down,Triangle,Random
89	0 - 127	Lfo1 Rate	0.01 Hz-400.00 Hz
90	0/64	Lfo1 Retrigger	Off,On
91	0 - 127	Lfo1 Phase	-180 deg - +180 deg
92	0 - 127	Lfo1 Delay	0 - 127
93	0 - 127	Lfo1 Fade In	0 - 127
94	0 - 127	Lfo2 Fade Out	0 - 127
95	0 - 127	Lfo1 Rate KF	-200 - +200
96	0,8,15,...	Lfo1 Rate Mod Source1	Off,LFO1,LFO2,...
97	0 - 127	Lfo1 Rate Mod Depth1	-64 - +63
98	0,8,15,...	Lfo1 Rate Mod Source2	Off,LFO1,LFO2,...
99	0 - 127	Lfo1 Rate Mod Depth2	-64 - +63
100	0,8,15,...	Lfo1 Level Mod Source	Off,LFO1,LFO2,...
101	0 - 127	Lfo1 Level Mod Depth	-64 - +63
102	0/64	Lfo1 Clock	Off,On
103	0,10,18,...	Lfo1 Note Length	1/1,1/2 dot,1/2,1/2 trpl,...
104	0,22,43...	Lfo2 Waveform	Sine,Square,Saw Up,Saw Down,Triangle,Random
105	0 - 127	Lfo2 Rate	0.01 Hz-400.00 Hz
106	0/64	Lfo2 Retrigger	Off,On
107	0 - 127	Lfo2 Phase	-180 deg - +180 deg
108	0 - 127	Lfo2 Delay	0 - 127
109	0 - 127	Lfo2 Fade In	0 - 127
110	0 - 127	Lfo2 Fade Out	0 - 127
111	0 - 127	Lfo2 Rate KF	-200 - +200
112	0,8,15,...	Lfo2 Rate Mod Source1	Off,LFO1,LFO2,...
113	0 - 127	Lfo2 Rate Mod Depth1	-64 - +63
114	0,8,15,...	Lfo2 Rate Mod Source2	Off,LFO1,LFO2,...
115	0 - 127	Lfo2 Rate Mod Depth2	-64 - +63
116	0,8,15,...	Lfo2 Level Mod Source	Off,LFO1,LFO2,...
117	0 - 127	Lfo2 Level Mod Depth	-64 - +63
118	0/64	Lfo2 Clock	Off,On
119	0,10,18,...	Lfo2 Note Length	1/1,1/2 dot,1/2,1/2 trpl,...
120	0	All Sound Off	Immediate silence
121	not used	Reset All Controllers	not used
122	not used	Local Control Off	not used
123	0	All Notes Off	Voices fade out normally
124	not used	Omni Off	not used
125	not used	Omni On	not used
126	not used	Mono On	not used
127	not used	Poly On	not used

## Lightwave

KeyP	Ctrl Range	Parameter	Parameter Range
..	..	..	..
110	0 - 127	<i>Free Env Attack</i>	0 - 127
111	0 - 127	<i>Free Env Decay</i>	0 - 127
112	0 - 127	<i>Free Env Sustain</i>	0 - 127
113	0 - 127	<i>Free Env Release</i>	0 - 127
114	0 - 127	<i>Free Env TKF</i>	-200 - +200

## Minimax

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	<i>Bank Select</i>	0 - 127
1	0 - 127	Modulation	0 - 127
2	not used	<i>Breath</i>	not used
3	not used	<i>undefined</i>	not used
4	not used	<i>Foot Pedal</i>	not used
5	0 - 127	Glide Time	0 - 127
6	not used	<i>Data Entry</i>	not used
7	0 - 127	Volume (Mixer)	0 - 127
8	not used	<i>Balance</i>	not used
9	not used	<i>undefined</i>	not used
10	0 - 127	Pan (Mixer)	left 64 - right 63
11	0 - 127	Volume	0 - 127
12	0,22,43,...	Osc1 Range	LO, 32', 16', 8', 4', 2'
13	0,22,43,...	Osc1 Waveform	Triangle, TriSaw, Saw, Square, Wide Rect, NarrowRect
14	0,22,43,...	Osc2 Range	LO, 32', 16', 8', 4', 2'
15	0 - 127	Osc2 Frequency	-64 - +63
16	0,22,43,...	Osc2 Waveform	Triangle, TriSaw, Saw, Square, Wide Rect, NarrowRect
17	0,22,43,...	Osc3 Range	LO, 32', 16', 8', 4', 2'
18	0 - 127	Osc3 Frequency	-64 - +63
19	0,22,43,...	Osc3 Waveform	Triangle, TriSaw, Saw, Square, Wide Rect, NarrowRect
20	0/64	Osc3 Control	On, Off
21	0 - 127	Tune	-64 - +63
22	0/64	Osc Modulation	Off/On
23	0 - 127	Pitch AT	-64 - +63
24	0,6,11,...	PB Range	0-24
25	0 - 127	Osc1 Volume	0 - 127
26	0 - 127	Osc2 Volume	0 - 127
27	0 - 127	Osc3 Volume	0 - 127
28	0/64	Osc1 Switch	Off/On
29	0/64	Osc2 Switch	Off/On
30	0/64	Osc3 Switch	Off/On
31	not used	<i>undefined</i>	not used
32	0 - 127	<i>Bank Select</i>	0 - 127
33	0 - 127	Noise Volume	0 - 127
34	0/64	Noise Switch	Off/On
35	0/64	Noise Type	White, Pink
36	0 - 127	External Volume	0 - 127
37	0/64	External Switch	Off/On
38	0/64	Feedback	Off/On
39	0,22,43,...	External Source	slot1-4, Analog, USB



40	0 - 127	Cutoff	0 - 127
41	0 - 127	Emphasis	0 - 127
42	0 - 127	Amount of Contour	0 - 127
43	0 - 127	Vcf Env Attack	0 - 127
44	0 - 127	Vcf Env Decay	0 - 127
45	0 - 127	Vcf Env Sustain	0 - 127
46	0 - 127	Vcf Env Velocity	0 - 127
47	0/64	Vcf Modulation	Off/On
48	0/64	Vcf Kybd Ctrl1	Off/On
49	0/64	Vcf Kybd Ctrl2	Off/On
50	0 - 127	Vcf AT	-64 - +63
51	0 - 127	Amp AT	-64 - +63
52	0 - 127	Amp Env Attack	0 - 127
53	0 - 127	Amp Env Decay	0 - 127
54	0 - 127	Amp Env Sustain	0 - 127
55	0 - 127	Amp Env Velocity	0 - 127
56	0 - 127	MW Intensity	0 - 127
57	0 - 127	MW Offset	0 - 127
58	0 - 127	Modulation Mix	0 - 127
59	0/64	Env Decay	Off/On
60	0/64	Env Retrigger	Off/On
61	0/64	Low Note Priority	Off/On
62	not used	undefined	not used
63	not used	undefined	not used
64	0 - 127	Sustain Pedal	Off/On
65	0/64	Glide Switch	Off/On
66	not used	Sostenuto	not used
67	not used	Soft Pedal	not used
68	0/64	Single Mode	Off,On
..			
120	0	All Sound Off	Immediate silence
121	not used	Reset All Controllers	not used
122	not used	Local Control Off	not used
123	0	All Notes Off	Voices fade out normally
124	not used	Omni Off	not used
125	not used	Omni On	not used
126	not used	Mono On	not used
127	not used	Poly On	not used

## ProOne

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	<i>Bank Select</i>	0 - 127
1	0 - 127	Modulation	0 - 127
2	not used	<i>Breath</i>	not used
3	not used	<i>undefined</i>	not used
4	not used	<i>Foot Pedal</i>	not used
5	0 - 127	Glide Time	0 - 127
6	not used	<i>Data Entry</i>	not used
7	0 - 127	Volume (Mixer)	0 - 127
8	not used	<i>Balance</i>	not used
9	not used	<i>undefined</i>	not used
10	0 - 127	Pan (Mixer)	left 64 - right 63
11	0 - 127	Volume	0 - 127
12	0,33,65,97	OscA Octave	0-3
13	0 - 127	OscA Frequency	0 - 127
14	0/64	OscA Sync/Off	Off,Sync
15	0/64	OscA Saw Enable	Off/On
16	0/64	OscA Squ Enable	Off/On
17	0 - 127	OscA Pulse Width	0 - 127
18	0,33,65,97	OscB Octave	0-3
19	0-127	OscB Frequency	0 - 127
20	0/64	OscB Lofreq/Normal	Normal,Lofreq
21	0/64	OscB Kybd/Off	Off,Kybd
22	0/64	OscB Saw Enable	Off/On
23	0/64	OscB Triangle Enable	Off/On
24	0/64	OscB Squ Enable	Off/On
25	0 - 127	OscB Pulse Width	0 - 127
26	0 - 127	OscA Level	0 - 127
27	0 - 127	OscB Level	0 - 127
28	0 - 127	Noise/Ext Level	0 - 127
29	not used	<i>undefined</i>	not used
30	not used	<i>undefined</i>	not used
31	not used	<i>undefined</i>	not used
32	0 - 127	<i>Bank Select</i>	0 - 127
33	0 - 127	Vcf Cutoff	0 - 127
34	0 - 127	Vcf Resonance	0 - 127
35	0 - 127	Vcf Env Amount	0 - 127
36	0 - 127	Vcf Kybd Amount	0 - 127
37	0 - 127	Vcf Env Attack	0 - 127
38	0 - 127	Vcf Env Decay	0 - 127
39	0 - 127	Vcf Env Sustain	0 - 127
40	0 - 127	Vcf Env Release	0 - 127
41	0 - 127	Vcf Env Velocity	0 - 127
42	0 - 127	Amp Env Attack	0 - 127
43	0 - 127	Amp Env Decay	0 - 127
44	0 - 127	Amp Env Sustain	0 - 127
45	0 - 127	Amp Env Release	0 - 127
46	0 - 127	Amp Env Velocity	0 - 127
47	0 - 127	Lfo Frequency	0 - 127
48	0/64	Lfo Saw Enable	Off/On
49	0/64	Lfo Triangle Enable	Off/On
50	0/64	Lfo Squ Enable	Off/On
51	0/64	Lfo Retrigger/Free Run	Free Run,Retrig
52	0 - 127	Lfo Init Phase	-180 deg - +180 deg
53	0/64	Lfo MIDI/Hertz	Hertz,MIDI
54	0,10,18,...	Lfo Note Length	1/1,1/2 dot,1/2, 1/2 trpl,...
55	0 - 127	Mod Filter Env Amount	0 - 127
56	0/64	Mod Filter Env Route	Direct,Wheel
57	0 - 127	Mod Osc B Amount	0 - 127
58	0/64	Mod Osc B Route	Direct,Wheel
59	0 - 127	Mod Lfo Amount	0 - 127
60	0/64	Mod Lfo Route	Direct,Wheel
61	not used	<i>undefined</i>	not used
62	not used	<i>undefined</i>	not used
63	not used	<i>undefined</i>	not used
64	0 - 127	<i>Sustain Pedal</i>	Off/On

65	0/64	Glide Switch	Normal,Auto
66	not used	<i>Sostenuto</i>	not used
67	not used	<i>Soft Pedal</i>	not used
68	0/64	Voice Mode	Poly,Single
69	not used	<i>Hold Pedal</i>	not used
70	0,44,86	Mod Osc A Frequency	Direct,Off,Wheel
71	0,44,86	Mod Osc A Pulse Width	Direct,Off,Wheel
72	0,44,86	Mod Osc B Frequency	Direct,Off,Wheel
73	0,44,86	Mod Osc B Pulse Width	Direct,Off,Wheel
74	0,44,86	Mod Filter Cutoff	Direct,Off,Wheel
75	0,6,11,...	PB Range	0-24
76	0 - 127	MW Intensity	0 - 127
77	0 - 127	MW Offset	0 - 127
78	0 - 127	Pitch AT Amount	-64 - + 63
79	0,44,86	Pitch AT Route	Osc B,Osc A+B,Osc A
80	0 - 127	Filter AT Amount	-64 - + 63
81	0/64	Mode Retrig/Normal	Normal,Retrigger
82	0/64	Mode Repeat/Normal	Normal,Repeat
83	0/64	Mode Drone/Off	Off,Drone
84	0 - 127	Global Tune	-5.00 - +5.00
85	0/64	Note Priority	Last Note,Low Note
86	0/64	Global MIDI/Lfo	Lfo,MIDI
87	0/64	Ext/Noise	Noise,External
88	0/64	EnvF/Off	Off,EnvF
89	0 - 127	Threshold	0-127
90	0,22,43,...	External Source	slot1-4,Analog,USB
...			
120	0	<i>All Sound Off</i>	Immediate silence
121	not used	<i>Reset All Controllers</i>	not used
122	not used	<i>Local Control Off</i>	not used
123	0	<i>All Notes Off</i>	Voices fade out normally
124	not used	<i>Omni Off</i>	not used
125	not used	<i>Omni On</i>	not used
126	not used	<i>Mono On</i>	not used
127	not used	<i>Poly On</i>	not used

## SixString

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	<i>Bank Select MSB</i>	0 - 127
1	0 - 127	Modulation Wheel	0 - 127
2	0/64	GitType	Acoustic / Electric
3	0 - 127	Inertia	0 - 127
4	0, 16, 32, .. 127	StringSet	B Double, ..., MonoStr
5	0 - 127	Portamento Time	0 - 127
6	0, 2, 4, 5 .. 127	SkipHarm	1 - 70
7	0 - 127	Volume (Mixer)	0 - 127
8	0 - 127	BoostHarm	0.0 - 10.0
9	0 - 127	Elast	0 - 127
10	0 - 127	Pan (Mixer)	left 64 - right 63
11	0 - 127	MainVol	0 - 127
12	0 - 127	ExcLevel	0 - 127
13	0 - 127	ExcPos	0 - 127
14	0 - 127	Vel>Pos	-64 - +63
15	0 - 127	HiCut	20 - 16.000 Hz
16	0 - 127	LowCut	20 - 16.000 Hz
17	0 - 127	PickAtt	0 - 100 ms
18	0 - 127	PickDec	0 - 100 ms
19	0 - 127	Vel>Att (Pluck)	-64 - +63
20	0 - 127	Vel>Dec (Pluck)	-64 - +63
21	0 - 127	Global (Pluck)	0 - 127
22	0 - 127	Noise (Pluck)	0 - 127
23	0 - 127	Vel>Nois (Pluck)	0 - 127
24	0 - 127	Decay (Damping)	0 - 127
25	0 - 127	Release (Damping)	0 - 127
26	0 - 127	HDamp	0 - 127
27	0 - 127	Vel>Damp	-64 - +63
28	0/64	LinkPos	Off/On
29	0 - 127	PickUp1	0 - 127
30	0 - 127	PickUp2	0 - 127
31	0 - 127	Stereo	0 - 127
32	0 - 127	<i>Bank Select LSB</i>	0 - 127
33	0 - 127	PUp1 Lev	0 - 127
34	0 - 127	PUp2 Lev	0 - 127
35	0/64	Active (PickUp)	Off/On
36	0 - 127	HPF	20 - 20.000 Hz
37	0 - 127	LPF	20 - 20.000 Hz
38	0 - 127	LPFRes	0 - 127
39	0/64	Active (Body)	Off/On
40	0 - 127	Relation	-64 - +63
41	0 - 127	Freq1	20 - 20.000 Hz
42	0 - 127	Level1	-inf - 0dB
43	0 - 127	Freq2	20 - 20.000 Hz
44	0 - 127	Level2	-inf - 0dB
45	0 - 127	Freq3	20 - 20.000 Hz
46	0 - 127	Level3	-inf - 0dB
47	0, 21, 42 .. 127	Type (Slap)	Hard1-3, Soft1-3
48	0 - 127	Strength	0 - 127
49	0 - 127	Distance	0 - 127
50	0 - 127	Deflection	0 - 127
51	0 - 127	EnvAtt (Pitch)	0 - 1.000 ms
52	0 - 127	EnvDec (Pitch)	0 - 1.000 ms
53	0 - 127	Vel>Env	0 - 127
54	0 - 127	EnvDepth	0 - 127
55	0 - 127	Threshold	0 - 127
56	0 - 127	TKF Key	C-2 - G8
57	0 - 127	TKF Int	-100% - +100%
58	0, 5, 10, .. 127	AT>Pitch	-12 - +12 semitones
59	0 - 127	Freq (LFO)	0 - 150 Hz
60	0 - 127	AT Lev	0 - 127
61	0 - 127	MW Lev	0 - 127
62	0 - 127	GI Lev	0 - 127
63	0 - 127	Coarse (Tune)	-12 - +12 semitones
64	0 - 127	<i>Sustain Pedal</i>	Off/On

65	0/64	Portamento On/Off	Off/On
66	0 - 127	Single Mode	-99 - +99 cents
67	0 - 127	Fine (Tune)	-99 - +99 cents
68	0, 10, 20, ... 127	PW Range	0 - 12 semitones
..			
..			
120	0	<i>All Sounds Off</i>	Immediate silence
121	not used	<i>Reset All Controllers</i>	not used
122	not used	<i>Local Control</i>	not used
123	0	<i>All Notes Off</i>	Voices fade out normally
124	not used	<i>Omni Mode Off</i>	not used
125	not used	<i>Omni Mode On</i>	not used
126	not used	<i>Poly Mod On/Off</i>	not used
127	not used	<i>Poly Mode On</i>	not used

## Vectron Player

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	<i>Bank Select MSB</i>	0 - 127
1	0 - 127	Modulation Wheel	0 - 127
2	0/64	ModWRet	Off/On
3	0 - 127	CutOff	0 - 127
4	0 - 127	Resonance	0 - 127
5	not used	not used	not used
6	not used	not used	not used
7	0 - 127	Volume (Mixer)	0 - 127
8	not used	not used	not used
9	not used	not used	not used
10	0 - 127	Pan (Mixer)	left 64 - right 63
11	0 - 127	Main Vol	0 - 127
12	0 - 127	JoystickX	-64 - +63
13	0 - 127	JoystickY	-64 - +63
14	0/64	JoySRet	Off/On
..			
..			
32	not used	<i>Bank Select LSB</i>	0 - 127
..			
..			
64	0 - 127	<i>Sustain Pedal</i>	Off/On
..			
..			
120	0	<i>All Sounds Off</i>	Immediate silence
121	not used	<i>Reset All Controllers</i>	not used
122	not used	<i>Local Control</i>	not used
123	0	<i>All Notes Off</i>	Voices fade out normally
124	not used	<i>Omni Mode Off</i>	not used
125	not used	<i>Omni Mode On</i>	not used
126	not used	<i>Poly Mod On/Off</i>	not used
127	not used	<i>Poly Mode On</i>	not used

## Interpole

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	<i>Bank Select</i>	0 - 127
1	not used	<i>Modulation</i>	not used
2	not used	<i>Breath</i>	not used
3	not used	<i>undefined</i>	not used
4	not used	<i>Foot Pedal</i>	not used
5	not used	<i>Portamento Time</i>	not used
6	not used	<i>Data Entry</i>	not used
7	0 - 127	Volume (Mixer)	0 - 127
8	not used	<i>Balance</i>	not used
9	not used	<i>undefined</i>	not used
10	0 - 127	Pan (Mixer)	left 64 - right 63
11	not used	<i>Expression</i>	not used
12	0/64	Env1 Bypass	Bypass,Effect
13	0/64	Env1 External	Internal,External
14	0/64	Env1 Gate	Envelope,Gate
15	0/64	Env1 Trigger	Sens,MIDI
16	0 - 127	Env1 Sens	0 - 127
17	0 - 127	Env1 Attack	0 - 127
18	0 - 127	Env1 Decay	0 - 127
19	0 - 127	Env1 Sustain	0 - 127
20	0/64	Env1 Release	Off/On
21	0/64	Lfo1 Sync	Off,MIDI
22	0,10,18,...	Lfo1 Note Length	1/1,1/2 dot,1/2, 1/2 trpl,...
23	0/64	Lfo1 Retrigger	Off,MIDI
24	0 - 127	Lfo1 Phase	-180 deg - +180 deg
25	0 - 127	Lfo1 Env Sweep	-64 - +63
26	0 - 127	Lfo1 Rate	0.01 Hz-100.00 Hz
27	0,22,43,...	LFO1 Waveform	Sine, Square, Saw Up, Saw Down, Triangle, Random
28	0 - 127	Lfo1 VCF	0 - 127
29	0 - 127	Lfo1 VCA	0 - 127
30	0 - 127	Filter1 Drive	-64 - +63
31	0 - 127	Filter1 Env Sweep	-64 - +63
32	0 - 127	<i>Bank Select</i>	0 - 127
33	0 - 127	Filter1 Cutoff	0 - 127
34	0 - 127	Filter1 Resonance	0 - 127
35	0/64	VCA1	Out,In
36	0/64	Env2 Bypass	Bypass,Effect
37	0/64	Env2 External	Internal,External
38	0/64	Env2 Gate	Envelope,Gate
39	0/64	Env2 Trigger	Sens,MIDI
40	0 - 127	Env2 Sens	0 - 127
41	0 - 127	Env2 Attack	0 - 127
42	0 - 127	Env2 Decay	0 - 127
43	0 - 127	Env2 Sustain	0 - 127
44	0/64	Env2 Release	Off/On
45	0/64	Lfo2 Sync	Off,MIDI
46	0,10,18,...	Lfo2 Note Length	1/1,1/2 dot,1/2, 1/2 trpl,...
47	0/64	Lfo2 Retrigger	Off,MIDI
48	0 - 127	Lfo2 Phase	-180 deg - +180 deg
49	0 - 127	Lfo2 Env Sweep	-64 - +63
50	0 - 127	Lfo2 Rate	0.01 Hz-100.00 Hz
51	0,22,43,...	Lfo2 Waveform	Sine, Square, Saw Up, Saw Down, Triangle, Random
52	0 - 127	Lfo2 VCF	0 - 127
53	0 - 127	Lfo2 VCA	0 - 127
54	0 - 127	Filter2 Drive	-64 - +63
55	0 - 127	Filter2 Env Sweep	-64 - +63
56	0 - 127	Filter2 Cutoff	0 - 127
57	0 - 127	Filter2 Resonance	0 - 127
58	0/64	VCA2	Out,In
59	0/64	Link Lfo	Off/On

60	0/64	Link Mode	Normal,Inverse
61	0/64	Link Env	Off/On
62	0/64	Link Filter	Off/On
63	not used	<i>undefined</i>	not used
64	not used	<i>Sustain Pedal</i>	not used
65	not used	<i>Portamento</i>	not used
66	not used	<i>Sostenuto</i>	not used
67	not used	<i>Soft Pedal</i>	not used
68	not used	<i>Legato Footswitch</i>	not used
69	not used	<i>Hold Pedal</i>	not used
70	0,22,43,...	Input	Slot1-4,Analog,USB
71	0,22,43,...	External	Slot1-4,Analog,USB

## Vocodizer

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	0 - 127	<i>Bank Select MSB</i>	0 - 127
1	0 - 127	Attack (LPF EnvF)	1 - 250 ms
2	0 - 127	Release (LPF EnvF)	1 - 500 ms
3	0 - 127	Attack (BPF EnvF)	1 - 250 ms
4	0 - 127	Release (BPF EnvF)	1 - 500 ms
5	0 - 127	Attack (HPF EnvF)	1 - 250 ms
6	0 - 127	Release (HPF EnvF)	1 - 500 ms
7	0 - 127	Volume (Mixer)	0 - 127
8	0 - 127	LPF Gain	0 - 127
9	0 - 127	BPF Gain	0 - 127
10	0 - 127	Pan (Mixer)	0 - 127
11	0 - 127	HPF Gain	0 - 127
12	0 - 127	AnalyseQ	0 - 127
13	0/64	LinkFltQ	0 - 127
14	0 - 127	SynthQ	0 - 127
15	0 - 127	LPF Freq	20 - 24.000 Hz
16	0 - 127	BPF1Freq	20 - 24.000 Hz
17	0 - 127	BPF2Freq	20 - 24.000 Hz
18	0 - 127	BPF3Freq	20 - 24.000 Hz
19	0 - 127	BPF4Freq	20 - 24.000 Hz
20	0 - 127	BPF5Freq	20 - 24.000 Hz
21	0 - 127	BPF6Freq	20 - 24.000 Hz
22	0 - 127	BPF7Freq	20 - 24.000 Hz
23	0 - 127	BPF8Freq	20 - 24.000 Hz
24	0 - 127	BPF9Freq	20 - 24.000 Hz
25	0 - 127	BPF10Freq	20 - 24.000 Hz
26	0 - 127	BPF11Freq	20 - 24.000 Hz
27	0 - 127	BPF12Freq	20 - 24.000 Hz
28	0 - 127	BPF13Freq	20 - 24.000 Hz
29	0 - 127	BPF14Freq	20 - 24.000 Hz
30	0 - 127	BPF15Freq	20 - 24.000 Hz
31	0 - 127	BPF16Freq	20 - 24.000 Hz
32	0 - 127	<i>Bank Select LSB</i>	0 - 127
33	0 - 127	BPF17Freq	20 - 24.000 Hz
34	0 - 127	BPF18Freq	20 - 24.000 Hz
35	0 - 127	BPF19Freq	20 - 24.000 Hz
36	0 - 127	BPF20Freq	20 - 24.000 Hz
37	0 - 127	HPF Freq	20 - 24.000 Hz
38	0, 6, 11.. 127	LPF (Matrix)	LPF,BPF,....,HPF
39	0, 6, 11.. 127	BPF1 (Matrix)	LPF,BPF,....,HPF
40	0, 6, 11.. 127	BPF2 (Matrix)	LPF,BPF,....,HPF
41	0, 6, 11.. 127	BPF3 (Matrix)	LPF,BPF,....,HPF
42	0, 6, 11.. 127	BPF4 (Matrix)	LPF,BPF,....,HPF
43	0, 6, 11.. 127	BPF5 (Matrix)	LPF,BPF,....,HPF
44	0, 6, 11.. 127	BPF6 (Matrix)	LPF,BPF,....,HPF
45	0, 6, 11.. 127	BPF7 (Matrix)	LPF,BPF,....,HPF
46	0, 6, 11.. 127	BPF8 (Matrix)	LPF,BPF,....,HPF
47	0, 6, 11.. 127	BPF9 (Matrix)	LPF,BPF,....,HPF
48	0, 6, 11.. 127	BPF10 (Matrix)	LPF,BPF,....,HPF
49	0, 6, 11.. 127	BPF11 (Matrix)	LPF,BPF,....,HPF
50	0, 6, 11.. 127	BPF12 (Matrix)	LPF,BPF,....,HPF
51	0, 6, 11.. 127	BPF13 (Matrix)	LPF,BPF,....,HPF
52	0, 6, 11.. 127	BPF14 (Matrix)	LPF,BPF,....,HPF
53	0, 6, 11.. 127	BPF15 (Matrix)	LPF,BPF,....,HPF
54	0, 6, 11.. 127	BPF16 (Matrix)	LPF,BPF,....,HPF
55	0, 6, 11.. 127	BPF17 (Matrix)	LPF,BPF,....,HPF
56	0, 6, 11.. 127	BPF18 (Matrix)	LPF,BPF,....,HPF
57	0, 6, 11.. 127	BPF19 (Matrix)	LPF,BPF,....,HPF
58	0, 6, 11.. 127	BPF20 (Matrix)	LPF,BPF,....,HPF
59	0, 6, 11.. 127	HPF (Matrix)	LPF,BPF,....,HPF
60	0/64	Type (VU-Detect)	Default/Easy
61	0 - 127	Threshold	-96 - 0dB
62	0 - 127	Hysth	0 - 127
63	0 - 127	Time	0,1 - 20,0 ms
64	not used	<i>Sustain Pedal</i>	not used



64	not used	<i>Sustain Pedal</i>	not used
65	0/43/85	Type (UV-Source)	FiltOrig,PinkNoise,WhitNois
66	0 - 127	Level (UV Source)	-inf - 0dB
67	0 - 127	LoCutFrq	20 - 20.000 Hz
68	0 - 127	LPF Gain	0 - 127
69	0 - 127	BPF1Gain	0 - 127
70	0 - 127	BPF2Gain	0 - 127
71	0 - 127	BPF3Gain	0 - 127
72	0 - 127	BPF4Gain	0 - 127
73	0 - 127	BPF5Gain	0 - 127
74	0 - 127	BPF6Gain	0 - 127
75	0 - 127	BPF7Gain	0 - 127
76	0 - 127	BPF8Gain	0 - 127
77	0 - 127	BPF9Gain	0 - 127
78	0 - 127	BPF10Gain	0 - 127
79	0 - 127	BPF11Gain	0 - 127
80	0 - 127	BPF12Gain	0 - 127
81	0 - 127	BPF13Gain	0 - 127
82	0 - 127	BPF14Gain	0 - 127
83	0 - 127	BPF15Gain	0 - 127
84	0 - 127	BPF16Gain	0 - 127
85	0 - 127	BPF17Gain	0 - 127
86	0 - 127	BPF18Gain	0 - 127
87	0 - 127	BPF19Gain	0 - 127
88	0 - 127	BPF20Gain	0 - 127
89	0 - 127	HPF Gain	0 - 127
90	0 - 127	LPF Pan	left 64 - right 63
91	0 - 127	BPF1 Pan	left 64 - right 63
92	0 - 127	BPF2 Pan	left 64 - right 63
93	0 - 127	BPF3 Pan	left 64 - right 63
94	0 - 127	BPF4 Pan	left 64 - right 63
95	0 - 127	BPF5 Pan	left 64 - right 63
96	0 - 127	BPF6 Pan	left 64 - right 63
97	0 - 127	BPF7 Pan	left 64 - right 63
98	0 - 127	BPF8 Pan	left 64 - right 63
99	0 - 127	BPF9 Pan	left 64 - right 63
100	0 - 127	BPF10 Pan	left 64 - right 63
101	0 - 127	BPF11 Pan	left 64 - right 63
102	0 - 127	BPF12 Pan	left 64 - right 63
103	0 - 127	BPF13 Pan	left 64 - right 63
104	0 - 127	BPF14 Pan	left 64 - right 63
105	0 - 127	BPF15 Pan	left 64 - right 63
106	0 - 127	BPF16 Pan	left 64 - right 63
107	0 - 127	BPF17 Pan	left 64 - right 63
108	0 - 127	BPF18 Pan	left 64 - right 63
109	0 - 127	BPF19 Pan	left 64 - right 63
110	0 - 127	BPF20 Pan	left 64 - right 63
111	0 - 127	HPF Pan	left 64 - right 63
112	0, 21, 43.. 127	AnalyseIn (Source)	Slot1,Slot2,Slot3,Slot4, Analog, USB
113	0, 21, 43.. 127	SynthIn (Source)	Slot1,Slot2,Slot3,Slot4, Analog, USB
114	0 - 127	InGain (Analyse)	-inf - +24dB
115	0/64	Reset (Analyse)	Reset Margin Display
116	0 - 127	InGain (Synth)	-inf - +24dB
117	0/64	Reset (Synth)	Reset Margin Display
118	0 - 127	MasterVol	0 - 127
119	0/64	Reset (Master)	Reset Margin Display
120	0	<i>All Sounds Off</i>	Immediate silence
121	not used	<i>Reset All Controllers</i>	not used
122	not used	<i>Local Control</i>	not used
123	0	<i>All Notes Off</i>	Voices fade out normally
124	not used	<i>Omni Mode Off</i>	not used
125	not used	<i>Omni Mode On</i>	not used
126	not used	<i>Poly Mod On/Off</i>	not used
127	not used	<i>Poly Mode On</i>	not used

## StepSequencer

KeyP	Ctrl Range	Parameter	Parameter Range
0	0 - 127	StepLen	8/1, ... 1/64 dot
1	0/64	Loop	Off/On
2	0,8,16...127	LoopLen	1 - 16
3	0 - 127	SignMode	Off, AutoRestart, AutoStop
4	0 - 127	TimeSign (1)	1 - 500 ms
5	0 - 127	TimeSign (2)	2,4,8,16
6	0 - 127	CenterKey	C-2 - G8
7	0,1,3,4...127	Length01	1 - 96
8	0,1,3,4...127	Length02	1 - 96
9	0,1,3,4...127	Length03	1 - 96
10	0,1,3,4...127	Length04	1 - 96
11	0,1,3,4...127	Length05	1 - 96
12	0,1,3,4...127	Length06	1 - 96
13	0,1,3,4...127	Length07	1 - 96
14	0,1,3,4...127	Length08	1 - 96
15	0,1,3,4...127	Length09	1 - 96
16	0,1,3,4...127	Length10	1 - 96
17	0,1,3,4...127	Length11	1 - 96
18	0,1,3,4...127	Length12	1 - 96
19	0,1,3,4...127	Length13	1 - 96
20	0,1,3,4...127	Length14	1 - 96
21	0,1,3,4...127	Length15	1 - 96
22	0,1,3,4...127	Length16	1 - 96
23	0,1,3,4...127	GateD01	1-100%
24	0,1,3,4...127	GateD02	1-100%
25	0,1,3,4...127	GateD03	1-100%
26	0,1,3,4...127	GateD04	1-100%
27	0,1,3,4...127	GateD05	1-100%
28	0,1,3,4...127	GateD06	1-100%
29	0,1,3,4...127	GateD07	1-100%
30	0,1,3,4...127	GateD08	1-100%
31	0,1,3,4...127	GateD09	1-100%
32	0,1,3,4...127	GateD10	1-100%
33	0,1,3,4...127	GateD11	1-100%
34	0,1,3,4...127	GateD12	1-100%
35	0,1,3,4...127	GateD13	1-100%
36	0,1,3,4...127	GateD14	1-100%
37	0,1,3,4...127	GateD15	1-100%
38	0,1,3,4...127	GateD16	1-100%
39	0 - 127	Note01	C-2 - G8
40	0 - 127	Note02	C-2 - G8
41	0 - 127	Note03	C-2 - G8
42	0 - 127	Note04	C-2 - G8
43	0 - 127	Note05	C-2 - G8
44	0 - 127	Note06	C-2 - G8
45	0 - 127	Note07	C-2 - G8
46	0 - 127	Note08	C-2 - G8
47	0 - 127	Note09	C-2 - G8
48	0 - 127	Note10	C-2 - G8
49	0 - 127	Note11	C-2 - G8
50	0 - 127	Note12	C-2 - G8
51	0 - 127	Note13	C-2 - G8
52	0 - 127	Note14	C-2 - G8
53	0 - 127	Note15	C-2 - G8
54	0 - 127	Note16	C-2 - G8
55	0 - 127	Vel01	0 - 127
56	0 - 127	Vel02	0 - 127
57	0 - 127	Vel03	0 - 127
58	0 - 127	Vel04	0 - 127
59	0 - 127	Vel05	0 - 127
60	0 - 127	Vel06	0 - 127
61	0 - 127	Vel07	0 - 127
62	0 - 127	Vel08	0 - 127
63	0 - 127	Vel09	0 - 127
64	0 - 127	Vel01	0 - 127

65	0 - 127	Vel10	0 - 127
66	0 - 127	Vel11	0 - 127
67	0 - 127	Vel12	0 - 127
68	0 - 127	Vel13	0 - 127
69	0 - 127	Vel14	0 - 127
70	0 - 127	Vel15	0 - 127
71	0 - 127	Vel16	0 - 127

## Arpeggiator

KeyP	Ctrl Range	Parameter	Parameter Range
0	0/64	Mode (Scan)	Nnumber, NOrder
1	0/64	Pattern	Forward, Reverse, ..., Random
2	0,1,3,4..127	RndDepth	0 - 100
3	0/64	AutoRscn	Off/On
4	0 - 127	RscnLen	1 - 128
5	0/64	RscnMode	NewChords,Notes
6	0,32,64,96	CaptMode	Normal, AutoHold, Extend1/2
7	0,9,18,...,127	Ext2Len	1 - 15
8	0,7,14,...,127	NoteLen	4/1, ..., 1Clock
9	0,1,3,4..127	GateDur	1 - 99
10	0/64	VelMode	Original, Replace
11	0 - 127	LFOMod	0 - 127
12	0 - 127	MaxVel	1 - 127
13	0,16,32,...,127	OctvExt	0 - 7
14	0,16,32,...,127	Repeat	0 - 7
15	0 - 127	SweepTr	0 - 127
16	0,1,3,4..127	DropNorm	0 - 100
17	0,1,3,4..127	DropAlt	0 - 100
18	0 - 127	RestNote	C-2 - G8
19	0,26,51,77,102	Waveform	Triangle,Square, ...,Random
20	0/64	SpeedType	Clock,Freq
21	0 - 127	Beats	1 - 128
22	0,1,3,4..127	Clocks	0 - 96
23	0 - 127	Freq	0 - 20,00 Hz
24	0 - 127	Phase	-180° - +180°
25	0/64	Resync	Off/On
26	0/64	Internal	Off/On
27	0/64	Manual	Off/On
28	0/64	AutoReSync	Off/On
29	0/64	NoteChrd	Off/On
30	0 - 127	CtrlBase	C-2 - G8
31	0,5,10,...122	NoteTrans	-12 - +12 semitones
32	0/64	Thru	No/Yes
33	0/64	ManClk	No/Yes
34	0,1,3,4..127	OffBeats	0 - 96
35	0,1,3,4..127	OffClks	0 - 96

## Mixer/Aux

Ctrl#	Ctrl Range	Parameter	Parameter Range
0	not used	<i>Bank Select MSB</i>	reserved for Bank Select
1	not used	<i>Modulation</i>	not used
2	not used	<i>Breath</i>	not used
3	not used	<i>undefined</i>	not used
4	0 - 127	Headroom	-inf - 0dB
5	not used	<i>Portamento Time</i>	not used
6	not used	<i>Data Entry</i>	not used
7	0 - 127	Volume (Master Volume)	0 - 127
8	not used	<i>Balance</i>	not used
..	not used	<b>Analog In Parameters</b>	not used
10	0 - 127	Volume	0 - 127
11	0 - 127	Balance	-64 - +63
12	0/64	Mute	On/Off
13	0/64	Mix	On/Off
14	0 - 127	Reverb Send	0 - 127
15	0 - 127	Delay Send	0 - 127
16	0 - 127	Chorus Send	0 - 127
17	0 - 127	Gain	-inf - 24dB
..			
..		<b>USB In Parameters</b>	
20	0 - 127	Volume	0 - 127
21	0 - 127	Balance	-64 - +63
22	0/64	Mute	On/Off
23	0/64	Mix	On/Off
24	0 - 127	Reverb Send	0 - 127
25	0 - 127	Delay Send	0 - 127
26	0 - 127	Chorus Send	0 - 127
27	0 - 127	Gain	-inf - 24dB
..			
..		<b>Aux Send Master Parameters</b>	
30	0/64	Reverb Active	No/Yes
31	0 - 127	Reverb Master Send	0 - 127
32	not used	<i>Bank Select LSB</i>	reserved for Bank Select
33	0 - 127	Reverb Master Return	0 - 127
34	0/64	Delay Active	No/Yes
35	0 - 127	Delay Master Send	0 - 127
36	0 - 127	Delay Master Return	0 - 127
37	0/64	Chorus Active	No/Yes
38	0 - 127	Chorus Master Send	0 - 127
39	0 - 127	Chorus Master Return	0 - 127
..			
..			
		<b>Chorus Parameters</b>	
70	0/64	Type	Chorus/Flanger
71	0 - 127	Rate	0,01 Hz - 40,00 Hz
72	0 - 127	Depth	0 - 127
73	0 - 127	Feedback	-64 - +63
74	0 - 127	Phase	0 - 180
75	0 - 127	Delay Send	0 - 127
76	0 - 127	Reverb Send	0 - 127
..			
..			

		Reverb Parameters	
80	0 - 127	Pre Delay	0sec - 0,2sec
81	0 - 127	Low Cut	0 Hz - 24000 Hz
82	0 - 127	High Cut	0 Hz - 24000 Hz
83	0 - 127	Room Size	0 - 127
84	0 - 127	Rev Time	0 - 127
85	0 - 127	Shape	0 - 127
86	0 - 127	High Damp	0 Hz - 24000 Hz
..			
..			
		Delay Parameters	
90	0/64	ms/Bpm	ms/Bpm
91	0 - 127	Feedback L (Feedback)	-64 - +63
92	0 - 127	Feedback R	-64 - +63
93	0/64	Cross Feedback	Off/On
94	0 - 127	Tap1 (Delay L)	0 ms - 4000 ms
95	0 - 127	Tap2 (Delay C)	0 ms - 4000 ms
96	0 - 127	Tap3 (Delay R)	0 ms - 4000 ms
97	0 - 127	Tap4	0 ms - 4000 ms
98	0 - 127	LowDamp L (Low Damp)	0 Hz - 24000 Hz
99	0 - 127	LowDamp R	0 Hz - 24000 Hz
100	0 - 127	HighDamp L (High Damp)	0 Hz - 24000 Hz
101	0 - 127	HighDamp R	0 Hz - 24000 Hz
102	0 - 127	Level 1 (Level L)	0 - 127
103	0 - 127	Level 2 (Level C)	0 - 127
104	0 - 127	Level 3 (Level R)	0 - 127
105	0 - 127	Level 4	0 - 127
106	0 - 127	Pan 1	-64 - +63
107	0 - 127	Pan 2	-64 - +63
108	0 - 127	Pan 3	-64 - +63
109	0 - 127	Pan 4	-64 - +63
110	0, 9, 18 ...	Note Lenth 1 (Note Lenth L)	1/1, 1/2 dot, 1/2 ... 1/32 trpl
111	0, 9, 18 ...	Note Lenth 2 (Note Lenth C)	1/1, 1/2 dot, 1/2 ... 1/32 trpl
112	0, 9, 18 ...	Note Lenth 3 (Note Lenth R)	1/1, 1/2 dot, 1/2 ... 1/32 trpl
113	0, 9, 18 ...	Note Lenth 4	1/1, 1/2 dot, 1/2 ... 1/32 trpl
114	0 - 127	Reverb Send	0 - 127
..			

KeyP	Ctrl Range	Parameter	Parameter Range
120	0/64	Mute (Slot1 ... Slot4)	On/Off
121	0/64	Mix (Slot1 ... Slot4)	On/Off
122	0 - 127	Reverb Send (Slot1 ... Slot4)	0 - 127
123	0 - 127	Delay Send (Slot1 ... Slot4)	0 - 127
124	0 - 127	Chrous Send (Slot1 ... Slot4)	0 - 127
*	Diese Parameter werden über das geladene Device gesteuert		

## Inserts

### Parametric EQ

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Freq 1	20 Hz - 20000 Hz
71/91	0 - 127	Gain 1	-12dB - +12dB
72/92	0 - 127	Q 1	0,7 - 20
73/93	0 - 127	Freq 2	20 Hz - 20000 Hz
74/94	0 - 127	Gain 2	-12dB - +12dB
75/95	0 - 127	Q 2	0,7 - 20
76/96	0 - 127	Freq 3	20 Hz - 20000 Hz
77/97	0 - 127	Gain 3	-12dB - +12dB
78/98	0 - 127	Q 3	0,7 - 20
79/99	0 - 127	Freq 4	20 Hz - 20000 Hz
80/100	0 - 127	Gain 4	-12dB - +12dB
81/101	0 - 127	Q 4	0,7 - 20
..			
..			
89/109	0/64	Bypass	Off/On

### Stereo EQ

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Freq 1	20 Hz - 20000 Hz
71/91	0 - 127	Gain 1	-12dB - +12dB
72/92	0 - 127	Freq 2	20 Hz - 20000 Hz
73/93	0 - 127	Gain 2	-12dB - +12dB
74/94	0 - 127	Q 2	0,7 - 20
75/95	0 - 127	Freq 3	20 Hz - 20000 Hz
76/96	0 - 127	Gain 3	-12dB - +12dB
77/97	0 - 127	Q 3	0,7 - 20
78/98	0 - 127	Freq 4	20 Hz - 20000 Hz
79/99	0 - 127	Gain 4	-12dB - +12dB
..			
..			
89/109	0/64	Bypass	Off/On

### Graphic EQ

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	63Hz	-12dB - +12dB
71/91	0 - 127	125Hz	-12dB - +12dB
72/92	0 - 127	250Hz	-12dB - +12dB
73/93	0 - 127	500Hz	-12dB - +12dB
74/94	0 - 127	1000Hz	-12dB - +12dB
75/95	0 - 127	2000Hz	-12dB - +12dB
76/96	0 - 127	4000Hz	-12dB - +12dB
77/97	0 - 127	8000Hz	-12dB - +12dB
78/98	0 - 127	Gain	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Ensemble

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Rate	0,01 Hz - 40 Hz
71/91	0 - 127	Depth	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Master Chorus

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Predel L	0 ms - 100 ms
71/91	0 - 127	Predel R	0 ms - 100 ms
72/92	0/64	Waveform	Sine, Triangle
73/93	0 - 127	Shape	0 - 127
74/94	0 - 127	Rate	0,01 Hz - 40 Hz
75/95	0 - 127	Depth	0 - 127
76/96	0 - 127	Feedback	-64 - +63
77/97	0 - 127	Phase	-180 - +180
78/98	0 - 127	LoDamp	10 Hz - 24000 Hz
79/99	0 - 127	HiDamp	0 Hz - 24000 Hz
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Harmonic Chorus

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Split F	10 Hz - 4000 Hz
71/91	0 - 127	Lo Level	0 - 127
72/92	0 - 127	Hi Level	0 - 127
73/93	0 - 127	Rate	0,01 Hz - 40 Hz
74/94	0 - 127	Depth	0 - 127
75/95	0 - 127	Feedback	0 - 127
76/96	0 - 127	Phase	-180 - +180
77/97	0 - 127	Lo Damp	10 Hz - 24000 Hz
78/98	0 - 127	Hi Damp	0 Hz - 24000 Hz
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Hexa Chorus

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Rate	0,01 Hz - 40 Hz
71/91	0 - 127	Depth	0 - 127
72/92	0 - 127	Spread	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Triple Chorus

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Rate	0,01 Hz - 40 Hz
71/91	0 - 127	Depth	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Master Flanger

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Predel L	0 ms - 100 ms
71/91	0 - 127	Predel R	0 ms - 100 ms
72/92	0/64	Waveform	Sine, Triangle
73/93	0 - 127	Shape	0 - 127
74/94	0 - 127	Rate	0,01 Hz - 40 Hz
75/95	0 - 127	Depth	0 - 127
76/96	0 - 127	Feedback	-64 - +63
77/97	0 - 127	Phase	-180 - +180
78/98	0 - 127	LoDamp	10 Hz - 24000 Hz
79/99	0 - 127	HiDamp	0 Hz - 24000 Hz
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Harmonic Flanger

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Split F	10 Hz - 4000 Hz
71/91	0 - 127	Lo Level	0 - 127
72/92	0 - 127	Hi Level	0 - 127
73/93	0 - 127	Rate	0,01 Hz - 40 Hz
74/94	0 - 127	Depth	0 - 127
75/95	0 - 127	Feedback	0 - 127
76/96	0 - 127	Phase	-180 - +180
77/97	0 - 127	Lo Damp	10 Hz - 24000 Hz
78/98	0 - 127	Hi Damp	0 Hz - 24000 Hz
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On



## Random Flanger

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Predel L	0,01 Hz - 40 Hz
71/91	0 - 127	Predel R	0 - 127
72/92	0 - 127	Waveform	Step, Triangle, Sine
73/93	0 - 127	Rate	0,01 Hz - 40 Hz
74/94	0 - 127	Depth	0 - 127
75/95	0 - 127	Feedback	-64 - +63
76/96	0/64	PhaseInv	Off/On
77/97	0 - 127	LoDamp	10 Hz - 24000 Hz
78/98	0 - 127	HiDamp	0 Hz - 24000 Hz
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Step Flanger

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0/64	Waveform	Sine, Triangle
71/91	0 - 127	Shape	0 - 127
72/92	0 - 127	Rate	0,01 Hz - 40 Hz
73/93	0 - 127	Depth	0 - 127
74/94	0 - 127	Feedback	-64 - +63
75/95	0 - 127	Phase	-180 - +180
76/96	0 - 127	StepRate	0,25 - 38
77/97	0 - 127	Step Lag	0 - 127
78/98	0 - 127	LoDamp	10 Hz - 24000 Hz
79/99	0 - 127	HiDamp	0 Hz - 24000 Hz
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Master Phaser

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0/64	Type	6 Stage, 12 Stage
71/91	0 - 127	Manual	10 Hz - 10000 Hz
72/92	0 - 127	Resonance	0 - 127
73/93	0 - 127	Waveform	Sine, Triangle
74/94	0 - 127	Rate	0,01 Hz - 40 Hz
75/95	0 - 127	Depth	0 - 127
76/96	0 - 127	Phase	-180 - +180
77/97	0 - 127	Shape	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## SSB Phaser

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Shift L	-64 - +63
71/91	0 - 127	Freq L	-24 Hz - +24 Hz
72/92	0 - 127	Shift R	-64 - +63
73/93	0 - 127	Freq R	-24 Hz - +24 Hz
74/94	0 - 127	Range	0,01 Hz - 40 Hz
75/95	0 - 127	Feedback	-64 - +63
76/96	0/64	Link	Off/On
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## 2 V Pitch Shifter

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Coarse A	-24 - +12
71/91	0 - 127	Fine A	-100 - +100
72/92	0 - 127	Level A	0 - 127
73/93	0 - 127	Coarse B	-24 - +12
74/94	0 - 127	Fine B	-100 - +100
75/95	0 - 127	Level B	0 - 127
76/96	0 - 127	Speed	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Stereo Pitch Shifter

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Coarse L	-24 - +12
71/91	0 - 127	Fine L	-100 - +100
72/92	0 - 127	Level L	0 - 127
73/93	0 - 127	Coarse R	-24 - +12
74/94	0 - 127	Fine R	-100 - +100
75/95	0 - 127	Level R	0 - 127
76/96	0 - 127	Speed	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## FB Pitch Shifter

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Coarse	-24 - +12
71/91	0 - 127	Fine	-100 - +100
72/92	0 - 127	Feedback	0 - 127
73/93	0 - 127	Speed	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## AutoPan

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0/64	Rate	0 - 127
71/91	0 - 127	Waveform	Sine, Triangle
72/92	0 - 127	Depth	0 - 127
73/93	0 - 127	Phase	-180 - +180
74/94	0 - 127	Shape	0 - 127
75/95	0 - 127	Output	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Tremolo

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Rate	0 - 127
71/91	0 - 127	Waveform	Sine, Triangle
72/92	0 - 127	Depth	0 - 127
73/93	0 - 127	Phase	-180 - +180
74/94	0 - 127	Shape	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## AutoWah

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Cutoff	0 - 127
71/91	0 - 127	Res	0 - 127
72/92	0/64	Type	LPF,BPF
73/93	0 - 127	Attack	0 - 127
74/94	0 - 127	Decay	0 - 127
75/95	0 - 127	Depth	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Amplifier

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	In Gain	0 - 127
71/91	0/64	Boost	Off/On
72/92	0 - 127	Drive	0 - 127
73/93	0 - 127	Bass	-64 - +63
74/94	0 - 127	Mid	-64 - +63
75/95	0 - 127	Treble	-64 - +63
76/96	0 - 127	Bass	-64 - +63
77/97	0 - 127	Mid	-64 - +63
78/98	0 - 127	Presence	-64 - +63
79/99	0 - 127	Treble	-64 - +63
80/100	0/64	Post-EQ	Off/On
81/101	0 - 127	Output	0 - 127
82/102	0/64	Dist	Off/On
83/103	0/64	Speaker	Off/On
..			
..			
89/109	0/64	Bypass	Off/On

## Distortion

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Highpass	10 Hz - 1000 Hz
71/91	0 - 127	Drive	0 - 127
72/92	0 - 127	Lowpass	0 Hz - 24000 Hz
73/93	0 - 127	Output	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Overdrive

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Highpass	10 Hz - 1000 Hz
71/91	0 - 127	Drive	0 - 127
72/92	0 - 127	Color	0 - 127
73/93	0 - 127	Output	0 - 127
74/94	0 - 127	Freq 1	20 Hz - 20000 Hz
75/95	0 - 127	Gain 1	-12dB - +12dB
76/96	0 - 127	Q 1	0,7 - 20
77/97	0 - 127	Freq 2	20 Hz - 20000 Hz
78/98	0 - 127	Gain 2	-12dB - +12dB
79/99	0 - 127	Q 2	0,7 - 20
80/100	0 - 127	Freq 3	20 Hz - 20000 Hz
81/101	0 - 127	Gain 3	-12dB - +12dB
82/102	0 - 127	Q 3	0,7 - 20
83/103	0 - 127	Freq 4	20 Hz - 20000 Hz
84/104	0 - 127	Gain 4	-12dB - +12dB
85/105	0 - 127	Q 4	0,7 - 20
86/106	0/64	EQ Byp	Off/On
..			
..			
89/109	0/64	Bypass	Off/On

## Decimator

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Sample Rate	1 Hz - 48000 Hz
71/91	0 - 127	Decimate On/Off	Off/On
72/92	0 - 127	Bit Depth	1 - 16
73/93	0 - 127	Chop On/Off	Off/On
74/94	0 - 127	High Damp	0 Hz - 24000 Hz
75/95	0 - 127	Rate	0.01 Hz - 40 Hz
76/96	0 - 127	Depth	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Resonator

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Freq	45 Hz - 10000 Hz
71/91	0 - 127	Res	0 - 127
72/92	0 - 127	Damp	0 - 127
73/93	0/64	Waveform	Sine, Triangle
74/94	0 - 127	Rate	0,01 Hz - 40 Hz
75/95	0 - 127	Depth	0 - 127
76/96	0 - 127	Phase	-180 - +180
77/97	0 - 127	Shape	0 - 127
..			
..			
88/108	0 - 127	Dry	0 - 127
89/109	0 - 127	Wet	0 - 127
89/109	0/64	Bypass	Off/On

## Ringmodulator

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Carrier F	1 Hz - 1000 Hz
71/91	0 - 127	Waveform	Sine, Square, Saw Up, Saw Down, Triangle, Random
72/92	0 - 127	Rate	0,01 Hz - 40 Hz
73/93	0/64	Depth	0 - 127
74/94	0 - 127	Env Att	0 - 127
75/95	0 - 127	Env Dec	0 - 127
76/96	0 - 127	Env Depth	0 - 127
77/97	0 - 127	RM Amt	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Softclip

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Drive	0 - 127
71/91	0 - 127	Output	-inf - 0dB
..			
..			
89/109	0/64	Bypass	Off/On

## Stereo Expander

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Amount	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Tube

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Highpass	10 Hz - 1000 Hz
71/91	0 - 127	Drive	0 - 127
72/92	0 - 127	Color	0 - 127
73/93	0 - 127	Lowpass	0 Hz - 24000 Hz
74/94	0 - 127	Output	0 - 127
..			
..			
89/109	0/64	Bypass	Off/On

## Dynamics

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Attack (Expander)	1 ms - 100 ms
71/91	0 - 127	Release	1 ms - 1000 ms
72/92	0 - 127	Threshold	-60dB - 0dB
73/93	0 - 127	Ratio	1.0:1 - inf:1
74/94	0 - 127	Gain	-inf - +18dB
75/95	0/64	Bypass	Off/On
76/96	0 - 127	Attack (Compressor)	1 ms - 100 ms
77/97	0 - 127	Release	1 ms - 1000 ms
78/98	0 - 127	Threshold	-60dB - 0dB
79/99	0 - 127	Ratio	1.0:1 - inf:1
80/100	0 - 127	Gain	-inf - +18dB
81/101	0/64	Bypass	Off/On
82/102	0 - 127	Attack (Limiter)	1 ms - 100 ms
83/103	0 - 127	Release	1 ms - 1000 ms
84/104	0 - 127	Threshold	-60dB - 0dB
85/105	0 - 127	Ratio	1.0:1 - inf:1
86/106	0 - 127	Gain	-inf - +18dB
87/107	0/64	Bypass	Off/On
..			
..			
89/109	0/64	Bypass	Off/On

## Compressor

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Attack	1 ms - 100 ms
71/91	0 - 127	Release	1 ms - 1000 ms
72/92	0 - 127	Threshold	-60dB - 0dB
73/93	0 - 127	Ratio	1.0:1 - inf:1
74/94	0 - 127	Gain	-inf - +18dB
..			
..			
89/109	0/64	Bypass	Off/On

## Gate

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Attack	1 ms - 100 ms
71/91	0 - 127	Hold	1 ms - 1000 ms
72/92	0 - 127	Release	1 ms - 1000 ms
73/93	0 - 127	Threshold	-60dB - 0dB
74/94	0 - 127	Floor	-96dB - 0dB
75/95	0 - 127	Hysteresis	-10dB - 0dB
76/96	0 - 127	Gain	-inf - +18dB
..			
..			
89/109	0/64	Bypass	Off/On

## Expander

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Attack	1 ms - 100 ms
71/91	0 - 127	Release	1 ms - 1000 ms
72/92	0 - 127	Threshold	-60dB - 0dB
73/93	0 - 127	Ratio	1.0:1 - inf:1
74/94	0 - 127	Gain	-inf - +18dB
..			
..			
89/109	0/64	Bypass	Off/On

## Limiter

KeyP	Ctrl Range	Parameter	Parameter Range
70/90	0 - 127	Attack	1 ms - 100 ms
71/91	0 - 127	Release	1 ms - 1000 ms
72/92	0 - 127	Threshold	-60dB - 0dB
73/93	0 - 127	Ratio	1.0:1 - inf:1
74/94	0 - 127	Gain	-inf - +18dB
..			
..			
77/97			
89/109	0/64	Bypass	Off/On

## MIDI Implementation Chart

Function	Category	Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 1-16	1 1-16	User settings retained upon power-off
Mode	Default Altered Messages	3 1, 3, 3b no	3 1, 3, 3b no	1 / 3 = Single mode 3b = Multi mode
Note Number		0-127	0-127	Transmitted by Arpeggiator and Step Seq when Trig Out is enabled
Velocity	Note ON Note OFF	1-127 0	1-127 0-127	Transmitted by Arpeggiator and Step Seq when Trig Out is enabled
Aftertouch	Channel Key	no no	0-127 0-127	Key pressure messages pre-assigned as additional controller messages (see MIDI reference)
Pitch Bend		no	yes	14 Bit
Control Change		yes	yes	Messages are pre-assigned per device (see MIDI reference)
Program Change		no	0-127	Actual range depends upon size of current preset list for specific device
System Exclusive		no	no	
System Common		no	no	
System Realtime	Clock Commands	yes yes	yes yes	MIDI Clock Start, Stop
Other Messages	All Notes Off All Sounds Off	yes yes	yes yes	