

## Effect Module Firmware

The effect module firmware is based on 9 different configurations with 256 presets:

- reverb (room, hall1, hall2)
- gate (forward, reverse, left to right)
- delay/echo
- chorus/flanging/leslie
- pitch shift + delay
- chorus/flanging + reverb
- chorus + delay
- delay/echo + reverb
- distortion + reverb

All effect parameters can be controlled by NRPN messages. As addition you have a parametric 4-band EQ which parameters can also be controlled by NRPN messages.

### Preset selection

The different presets can be selected with Program Change and with the MIDI controller 0 (bank select). The following table shows the different values:

#	Name	Program Change	Bank	Configuration
<b>HALL1 : large hall</b>				
1	HALL1 1.0s	0	0	A : Reverb
2	HALL1 1.2s	1	0	A : Reverb
3	HALL1 1.5s	2	0	A : Reverb
4	HALL1 1.8s	3	0	A : Reverb
5	HALL1 2.0s	4	0	A : Reverb
6	HALL1 2.2s	5	0	A : Reverb
7	HALL1 2.5s	6	0	A : Reverb
8	HALL1 2.8s	7	0	A : Reverb
9	HALL1 3.0s	8	0	A : Reverb
10	HALL1 3.5s	9	0	A : Reverb
11	HALL1 4.0s	10	0	A : Reverb
12	HALL1 4.5s	11	0	A : Reverb
13	HALL1 5.0s	12	0	A : Reverb
14	HALL1 6.0s	13	0	A : Reverb
15	HALL1 8.0s	14	0	A : Reverb
16	HALL1 10.0s	15	0	A : Reverb
<b>HALL1 HIDAMP : large hall with high frequency filter on decay</b>				
17	HALL1 HIDAMP 1.0s	16	0	A : Reverb
18	HALL1 HIDAMP 1.2s	17	0	A : Reverb
19	HALL1 HIDAMP 1.5s	18	0	A : Reverb
20	HALL1 HIDAMP 1.8s	19	0	A : Reverb
21	HALL1 HIDAMP 2.0s	20	0	A : Reverb
22	HALL1 HIDAMP 2.2s	21	0	A : Reverb
23	HALL1 HIDAMP 2.5s	22	0	A : Reverb
24	HALL1 HIDAMP 2.8s	23	0	A : Reverb
25	HALL1 HIDAMP 3.0s	24	0	A : Reverb
26	HALL1 HIDAMP 3.5s	25	0	A : Reverb

SOUNDTRACK DIGITAL AUDIO 4CH/16CH – EFFECT MODULE FIRMWARE

27	HALL1 HIDAMP 4.0s	26	0	A : Reverb
28	HALL1 HIDAMP 4.5s	27	0	A : Reverb
29	HALL1 HIDAMP 5.0s	28	0	A : Reverb
30	HALL1 HIDAMP 6.0s	29	0	A : Reverb
31	HALL1 HIDAMP 8.0s	30	0	A : Reverb
32	HALL1 HIDAMP 10.0s	31	0	A : Reverb
<b>ROOM</b> : medium size room				
33	ROOM 0.5s	32	0	A : Reverb
34	ROOM 0.8s	33	0	A : Reverb
35	ROOM 1.0s	34	0	A : Reverb
36	ROOM 1.2s	35	0	A : Reverb
37	ROOM 1.5s	36	0	A : Reverb
38	ROOM 1.8s	37	0	A : Reverb
39	ROOM 2.0s	38	0	A : Reverb
40	ROOM 2.2s	39	0	A : Reverb
41	ROOM 2.5s	40	0	A : Reverb
42	ROOM 2.8s	41	0	A : Reverb
43	ROOM 3.0s	42	0	A : Reverb
44	ROOM 3.2s	43	0	A : Reverb
45	ROOM 3.5s	44	0	A : Reverb
46	ROOM 3.8s	45	0	A : Reverb
47	ROOM 4.0s	46	0	A : Reverb
48	ROOM 4.2s	47	0	A : Reverb
<b>ROOM HIDAMP</b> : medium size room with high frequency filter on decay				
49	ROOM HIDAMP 0.5s	48	0	A : Reverb
50	ROOM HIDAMP 0.8s	49	0	A : Reverb
51	ROOM HIDAMP 1.0s	50	0	A : Reverb
52	ROOM HIDAMP 1.2s	51	0	A : Reverb
53	ROOM HIDAMP 1.5s	52	0	A : Reverb
54	ROOM HIDAMP 1.8s	53	0	A : Reverb
55	ROOM HIDAMP 2.0s	54	0	A : Reverb
56	ROOM HIDAMP 2.2s	55	0	A : Reverb
57	ROOM HIDAMP 2.5s	56	0	A : Reverb
58	ROOM HIDAMP 2.8s	57	0	A : Reverb
59	ROOM HIDAMP 3.0s	58	0	A : Reverb
60	ROOM HIDAMP 3.2s	59	0	A : Reverb
61	ROOM HIDAMP 3.5s	60	0	A : Reverb
62	ROOM HIDAMP 3.8s	61	0	A : Reverb
63	ROOM HIDAMP 4.0s	62	0	A : Reverb
64	ROOM HIDAMP 4.2s	63	0	A : Reverb
<b>HALL2</b> : large concert hall				
65	HALL2 1.0s	64	0	A : Reverb
66	HALL2 1.2s	65	0	A : Reverb
67	HALL2 1.5s	66	0	A : Reverb
68	HALL2 1.8s	67	0	A : Reverb
69	HALL2 2.0s	68	0	A : Reverb

SOUNDTRACK DIGITAL AUDIO 4CH/16CH – EFFECT MODULE FIRMWARE

70	HALL2 2.2s	69	0	A : Reverb
71	HALL2 2.5s	70	0	A : Reverb
72	HALL2 2.8s	71	0	A : Reverb
73	HALL2 3.0s	72	0	A : Reverb
74	HALL2 3.5s	73	0	A : Reverb
75	HALL2 4.0s	74	0	A : Reverb
76	HALL2 4.5s	75	0	A : Reverb
77	HALL2 5.0s	76	0	A : Reverb
78	HALL2 6.0s	77	0	A : Reverb
79	HALL2 8.0s	78	0	A : Reverb
80	HALL2 10.0s	79	0	A : Reverb
<b>HALL2 HIDAMP</b> : large concert hall with high frequency filter on decay				
81	HALL2 HIDAMP 1.0s	80	0	A : Reverb
82	HALL2 HIDAMP 1.2s	81	0	A : Reverb
83	HALL2 HIDAMP 1.5s	82	0	A : Reverb
84	HALL2 HIDAMP 1.8s	83	0	A : Reverb
85	HALL2 HIDAMP 2.0s	84	0	A : Reverb
86	HALL2 HIDAMP 2.2s	85	0	A : Reverb
87	HALL2 HIDAMP 2.5s	86	0	A : Reverb
88	HALL2 HIDAMP 2.8s	87	0	A : Reverb
89	HALL2 HIDAMP 3.0s	88	0	A : Reverb
90	HALL2 HIDAMP 3.5s	89	0	A : Reverb
91	HALL2 HIDAMP 4.0s	90	0	A : Reverb
92	HALL2 HIDAMP 4.5s	91	0	A : Reverb
93	HALL2 HIDAMP 5.0s	92	0	A : Reverb
94	HALL2 HIDAMP 6.0s	93	0	A : Reverb
95	HALL2 HIDAMP 8.0s	94	0	A : Reverb
96	HALL2 HIDAMP 10.0s	95	0	A : Reverb
<b>FORWARD GATE</b>				
97	Low density forward gate 100 ms	96	0	B : Gate
98	Low density forward gate 150 ms	97	0	B : Gate
99	Medium density forward gate 200 ms	98	0	B : Gate
100	Medium density forward gate 250 ms	99	0	B : Gate
101	High density forward gate 300 ms	100	0	B : Gate
102	High density forward gate 350 ms	101	0	B : Gate
103	High density forward gate 400 ms	102	0	B : Gate
104	High density forward gate 450 ms	103	0	B : Gate
105	High density forward gate 500 ms	104	0	B : Gate
<b>REVERSE GATE</b>				
106	Low density reverse gate 100 ms	105	0	B : Gate
107	Low density reverse gate 150 ms	106	0	B : Gate
108	Medium density reverse gate 200 ms	107	0	B : Gate
109	Medium density reverse gate 250 ms	108	0	B : Gate
110	High density reverse gate 300 ms	109	0	B : Gate
111	High density reverse gate 350 ms	110	0	B : Gate
112	High density reverse gate 400 ms	111	0	B : Gate
113	High density reverse gate 450 ms	112	0	B : Gate

114	High density reverse gate 500 ms	113	0	B : Gate
<b>LEFT TO RIGHT GATE</b>				
115	Medium density left to right gate 500ms	114	0	B : Gate
116	High density left to right gate 500ms	115	0	B : Gate
<b>DISTORTION + REVERB</b> : For overdrive guitar				
117	Low distortion	116	0	I : Distortion
118	Medium distortion 1	117	0	I : Distortion
119	Medium distortion 2	118	0	I : Distortion
120	High distortion	119	0	I : Distortion
<b>MULTI TAP DELAY</b>				
121	3/4 time echo	120	0	C : Delay/Echo
122	3/4 time panned echo	121	0	C : Delay/Echo
123	4/4 time echo 1	122	0	C : Delay/Echo
124	4/4 time panned echo 1	123	0	C : Delay/Echo
125	4/4 time echo 2	124	0	C : Delay/Echo
126	4/4 time panned echo 2	125	0	C : Delay/Echo
127	Triplet	126	0	C : Delay/Echo
128	Panned triplet	127	0	C : Delay/Echo
<b>SINGLE SHORT DELAY</b>				
129	Single delay 20ms	0	1	C : Delay/Echo
130	Single delay 25ms	1	1	C : Delay/Echo
131	Single delay 30ms	2	1	C : Delay/Echo
132	Single delay 35ms	3	1	C : Delay/Echo
133	Single delay 40ms	4	1	C : Delay/Echo
134	Single delay 45ms	5	1	C : Delay/Echo
135	Single delay 50ms	6	1	C : Delay/Echo
136	Single delay 55ms	7	1	C : Delay/Echo
137	Single delay 60ms	8	1	C : Delay/Echo
138	Single delay 65ms	9	1	C : Delay/Echo
139	Single delay 70ms	10	1	C : Delay/Echo
140	Single delay 75ms	11	1	C : Delay/Echo
141	Single delay 80ms	12	1	C : Delay/Echo
142	Single delay 85ms	13	1	C : Delay/Echo
143	Single delay 90ms	14	1	C : Delay/Echo
144	Single delay 95ms	15	1	C : Delay/Echo
<b>SINGLE MEDIUM DELAY</b>				
145	Single delay 100ms	16	1	C : Delay/Echo
146	Single delay 125ms	17	1	C : Delay/Echo
147	Single delay 150ms	18	1	C : Delay/Echo
148	Single delay 175ms	19	1	C : Delay/Echo
149	Single delay 200ms	20	1	C : Delay/Echo
150	Single delay 225ms	21	1	C : Delay/Echo
151	Single delay 250ms	22	1	C : Delay/Echo
152	Single delay 300ms	23	1	C : Delay/Echo
153	Single delay 350ms	24	1	C : Delay/Echo
154	Single delay 400ms	25	1	C : Delay/Echo

SOUNDTRACK DIGITAL AUDIO 4CH/16CH – EFFECT MODULE FIRMWARE

155	Single delay 450ms	26	1	C : Delay/Echo
156	Single delay 500ms	27	1	C : Delay/Echo
157	Single delay 550ms	28	1	C : Delay/Echo
158	Single delay 600ms	29	1	C : Delay/Echo
159	Single delay 650ms	30	1	C : Delay/Echo
160	Single delay 700ms	31	1	C : Delay/Echo
<b>REGEN 20% DELAY</b>				
161	Regen 20% delay 100ms	32	1	C : Delay/Echo
162	Regen 20% delay 125ms	33	1	C : Delay/Echo
163	Regen 20% delay 150ms	34	1	C : Delay/Echo
164	Regen 20% delay 175ms	35	1	C : Delay/Echo
165	Regen 20% delay 200ms	36	1	C : Delay/Echo
166	Regen 20% delay 225ms	37	1	C : Delay/Echo
167	Regen 20% delay 250ms	38	1	C : Delay/Echo
168	Regen 20% delay 300ms	39	1	C : Delay/Echo
169	Regen 20% delay 350ms	40	1	C : Delay/Echo
170	Regen 20% delay 400ms	41	1	C : Delay/Echo
171	Regen 20% delay 450ms	42	1	C : Delay/Echo
172	Regen 20% delay 500ms	43	1	C : Delay/Echo
173	Regen 20% delay 550ms	44	1	C : Delay/Echo
174	Regen 20% delay 600ms	45	1	C : Delay/Echo
175	Regen 20% delay 650ms	46	1	C : Delay/Echo
176	Regen 20% delay 700ms	47	1	C : Delay/Echo
<b>REGEN 40% DELAY</b>				
177	Regen 40% delay 100ms	48	1	C : Delay/Echo
178	Regen 40% delay 125ms	49	1	C : Delay/Echo
179	Regen 40% delay 150ms	50	1	C : Delay/Echo
180	Regen 40% delay 175ms	51	1	C : Delay/Echo
181	Regen 40% delay 200ms	52	1	C : Delay/Echo
182	Regen 40% delay 225ms	53	1	C : Delay/Echo
183	Regen 40% delay 250ms	54	1	C : Delay/Echo
184	Regen 40% delay 300ms	55	1	C : Delay/Echo
185	Regen 40% delay 350ms	56	1	C : Delay/Echo
186	Regen 40% delay 400ms	57	1	C : Delay/Echo
187	Regen 40% delay 450ms	58	1	C : Delay/Echo
188	Regen 40% delay 500ms	59	1	C : Delay/Echo
189	Regen 40% delay 550ms	60	1	C : Delay/Echo
190	Regen 40% delay 600ms	61	1	C : Delay/Echo
191	Regen 40% delay 650ms	62	1	C : Delay/Echo
192	Regen 40% delay 700ms	63	1	C : Delay/Echo
<b>PANNING DELAY</b>				
193	Panning delay 100ms	64	1	C : Delay/Echo
194	Panning delay 100ms regen	65	1	C : Delay/Echo
195	Panning delay 200ms	66	1	C : Delay/Echo
196	Panning delay 200ms regen	67	1	C : Delay/Echo
197	Panning delay 300ms	68	1	C : Delay/Echo
198	Panning delay 300ms regen	69	1	C : Delay/Echo

199	Panning delay 350ms	70	1	C : Delay/Echo
200	Panning delay 350ms regen	71	1	C : Delay/Echo
<b>CHORUS</b>				
201	Chorus light depth 1	72	1	D : Chorus/Flanging
202	Chorus light depth 2	73	1	D : Chorus/Flanging
203	Chorus medium depth 1	74	1	D : Chorus/Flanging
204	Chorus medium depth 2	75	1	D : Chorus/Flanging
205	Chorus high depth 1	76	1	D : Chorus/Flanging
206	Chorus high depth 2	77	1	D : Chorus/Flanging
207	Chorus fast 1	78	1	D : Chorus/Flanging
208	Chorus fast 2	79	1	D : Chorus/Flanging
<b>SPECIAL CHORUS</b>				
209	Fast chorus with long delay	80	1	D : Chorus/Flanging
210	Quad chorus high feedback	81	1	D : Chorus/Flanging
211	Quad chorus resonant	82	1	D : Chorus/Flanging
212	Quad chorus medium depth	83	1	D : Chorus/Flanging
213	Quad chorus high depth	84	1	D : Chorus/Flanging
214	Deep stereo flanger	85	1	D : Chorus/Flanging
<b>LEZLIE</b> : chorus/tremolo for organ				
215	Lezlie slow	86	1	D : Chorus/Flanging
216	Lezlie fast	87	1	D : Chorus/Flanging
<b>FLANGER</b>				
217	Light depth flanger 1	88	1	D : Chorus/Flanging
218	Light depth flanger 2	89	1	D : Chorus/Flanging
219	Stereo light depth flanger	90	1	D : Chorus/Flanging
220	Medium depth flanger	91	1	D : Chorus/Flanging
221	Stereo medium depth flanger	92	1	D : Chorus/Flanging
222	Medium depth slow flanger	93	1	D : Chorus/Flanging
223	High depth flanger	94	1	D : Chorus/Flanging
224	Stereo high depth flanger	95	1	D : Chorus/Flanging
<b>PITCH SHIFTER</b> : stereo pitch shifter with controllable delay				
225	Up M3rd/Down 4th	96	1	E : Pitch shift
226	Up m3rd/Down 4th	97	1	E : Pitch shift
227	Up M3rd/Downaug4th	98	1	E : Pitch shift
228	Up 4th detune	99	1	E : Pitch shift
229	Down 4th detune	100	1	E : Pitch shift
230	Up 5th detune	101	1	E : Pitch shift
231	Down 5th detune	102	1	E : Pitch shift
232	Down M6th detune	103	1	E : Pitch shift
233	Down m6th detune	104	1	E : Pitch shift
234	Down M2nd/Down 4th	105	1	E : Pitch shift
235	Up oct/Down oct	106	1	E : Pitch shift
236	Up oct detune	107	1	E : Pitch shift
237	Down oct detune	108	1	E : Pitch shift
238	Light detune	109	1	E : Pitch shift
239	Deep detune	110	1	E : Pitch shift

SOUNDTRACK DIGITAL AUDIO 4CH/16CH – EFFECT MODULE FIRMWARE

240	Doubler	111	1	E : Pitch shift
<b>CHORUS + REVERB</b>				
241	Chorus + reverb 1	112	1	F : Chorus/Flanging + Reverb
242	Chorus + reverb 2	113	1	F : Chorus/Flanging + Reverb
243	Chorus + reverb 3	114	1	F : Chorus/Flanging + Reverb
<b>CHORUS + DELAY</b>				
244	Chorus + Delay 1	115	1	G : Chorus + Delay
245	Chorus + Delay 2	116	1	G : Chorus + Delay
246	Chorus + Delay 3	117	1	G : Chorus + Delay
<b>FLANGER + REVERB</b>				
247	Flanging + Reverb 1	118	1	F : Chorus/Flanging + Reverb
248	Flanging + Reverb 2	119	1	F : Chorus/Flanging + Reverb
249	Flanging + Reverb 3	120	1	F : Chorus/Flanging + Reverb
<b>DELAY + REVERB</b>				
250	Delay + Reverb	121	1	H : Delay + Reverb
251	Regen 20% delay + Reverb	122	1	H : Delay + Reverb
252	Regen 40% delay + Reverb	123	1	H : Delay + Reverb
253	Regen 50% delay + Reverb	124	1	H : Delay + Reverb
<b>PITCH SHIFTER</b>				
254	Detune + regen delay	125	1	E : Pitch shift
255	Down oct + regen delay	126	1	E : Pitch shift
<b>NO SOUND</b>				
256	No sound	127	1	

**NRPN commands**

Nrpn High	Nrpn Low	Description	Effective on Configuration
<b>General Settings</b>			
08	00	Effect ON/OFF : =0 effect bypass, =127 effect ON	All
08	01	Equalizer ON/OFF : =0 equalizer bypass, =127 equalizer ON	All
08	04	Input Gain : 0=-24dB, 16=-18db, 32=-12dB, 48=-6dB, 64=0dB 64=0dB, 96=+3dB, 127=+6dB	All
08	08	Equalizer low band gain : 0=-12dB, 64=0dB, 127=+12dB	All
08	09	Equalizer medium 1 band gain : 0=-12dB, 64=0dB, 127=+12dB	All
08	10	Equalizer medium 2 band gain : 0=-12dB, 64=0dB, 127=+12dB	All
08	11	Equalizer high band gain : 0=-12dB, 64=0dB, 127=+12dB	All
08	12	Equalizer low band frequency : 0=62Hz, 64=125Hz, 127=250Hz Frequency is the frequency giving +6dB when gain is +12dB (or -6dB when gain is -12dB)	All
08	13	Equalizer medium 1 band frequency : 0=125Hz, 64=250Hz, 127=500hz Frequency is center frequency of band pass	All
08	14	Equalizer medium 2 band frequency : 0=500Hz, 64=1KHz, 127=1.6Khz Frequency is center frequency of band pass	All
08	15	Equalizer high band frequency : 0=1KHz, 64=2KHz, 127=4Khz Frequency is the frequency giving +6dB when gain is +12dB (or -6dB when gain is -12dB)	All

SOUNDTRACK DIGITAL AUDIO 4CH/16CH – EFFECT MODULE FIRMWARE

<b>Delay/Echo Controls</b>			
02	00	Delay/Echo volume	C : Delay/Echo E : Pitch shift delay H : Delay+Reverb
02	01	Delay time	C, E, H
02	02	Echo feedback	C, E, H
<b>Reverb Controls</b>			
03	00	Reverb volume	A : Reverb F : Chorus+Reverb H : Delay+Reverb I : Distortion+Reverb
03	01	Reverb time	A, F, H, I
03	02	Reverb HDAMP : high frequency filter on decay. 0 (filter close) to 127 (filter open)	A, F, H, I
03	03	Reverb LDAMP : low frequency filter on decay. 0 (filter open) to 127 (filter close)	A, F, H, I
03	04	Reverb density : 0 (low density) to 127 (high density)	A, F, H, I
03	05	Reverb Pre lowpass filter : 0 (filter close) to 127 (filter open)	A, F, H, I
<b>Chorus/Flanging Controls</b>			
04	00	Chorus/Flanging volume	D : Chorus/Flanging F:Chorus/Flanging+Rev G : Chorus+Delay
04	01	Chorus/Flanging delay	D, F, G
04	02	Chorus/Flanging depth	D, F, G
04	03	Chorus/Flanging rate	D, F, G
04	04	Chorus/Flanging feedback	D, F, G
<b>Gate Controls</b>			
05	00	Gate volume 0 : direct sound volume=max, effect volume=0 32 : direct sound volume=max, effect volume=medium 64 : direct sound volume=max, effect volume=max 96 : direct sound volume=medium, effect volume=max 127 : direct sound volume=0, effect volume=max	B : Gate
05	01	Gate time	B
05	02	Gate density 0 (low density) to 127 (high density)	B
05	03	Gate Pre lowpass filter : 0 (filter close) to 127 (filter open)	B
<b>Pitch Shift Controls</b>			
06	00	Pitch shift volume	E : Pitchshift
06	01	Pitch shift left coarse tune : 52= -12 half tones, 53= -11 half tones, ..., 63=-1 half tone, 64=0, 65=+1 half tone, 66=+2 half tones, ..., 76=+12 half tones	E
06	02	Pitch shift right coarse tune : 52= -12 half tones, 53= -11 half tones, ..., 63=-1 half tone, 64=0, 65=+1 half tone, 66=+2 half tones, ..., 76=+12 half tones	E
06	03	Pitch shift left fine tune : 0= -1 half tone, 64=0, 127=+1 half tone	E
06	04	Pitch shift right fine tune : 0= -1 half tone, 64=0, 127=+1 half tone	E
02	01	Delay time	E
02	02	Delay feedback	E
<b>Distortion Controls</b>			
07	00	Distortion ON/OFF : =0 OFF, =127 ON	I : Distortion + Reverb
07	01	Distortion depth	I
07	02	Distortion low pass filter : 0 (filter close) to 127 (filter open)	I