R2A15220FP

7.1ch Electronic Volume with 16 Input Selector

Creat by Efim
Rev.1.0
Jun.24.2018

Description

R2A15220FP is an audio signal processor for home audio. This IC contains 8 channels electronic volume, input selector and 2 band tone control.

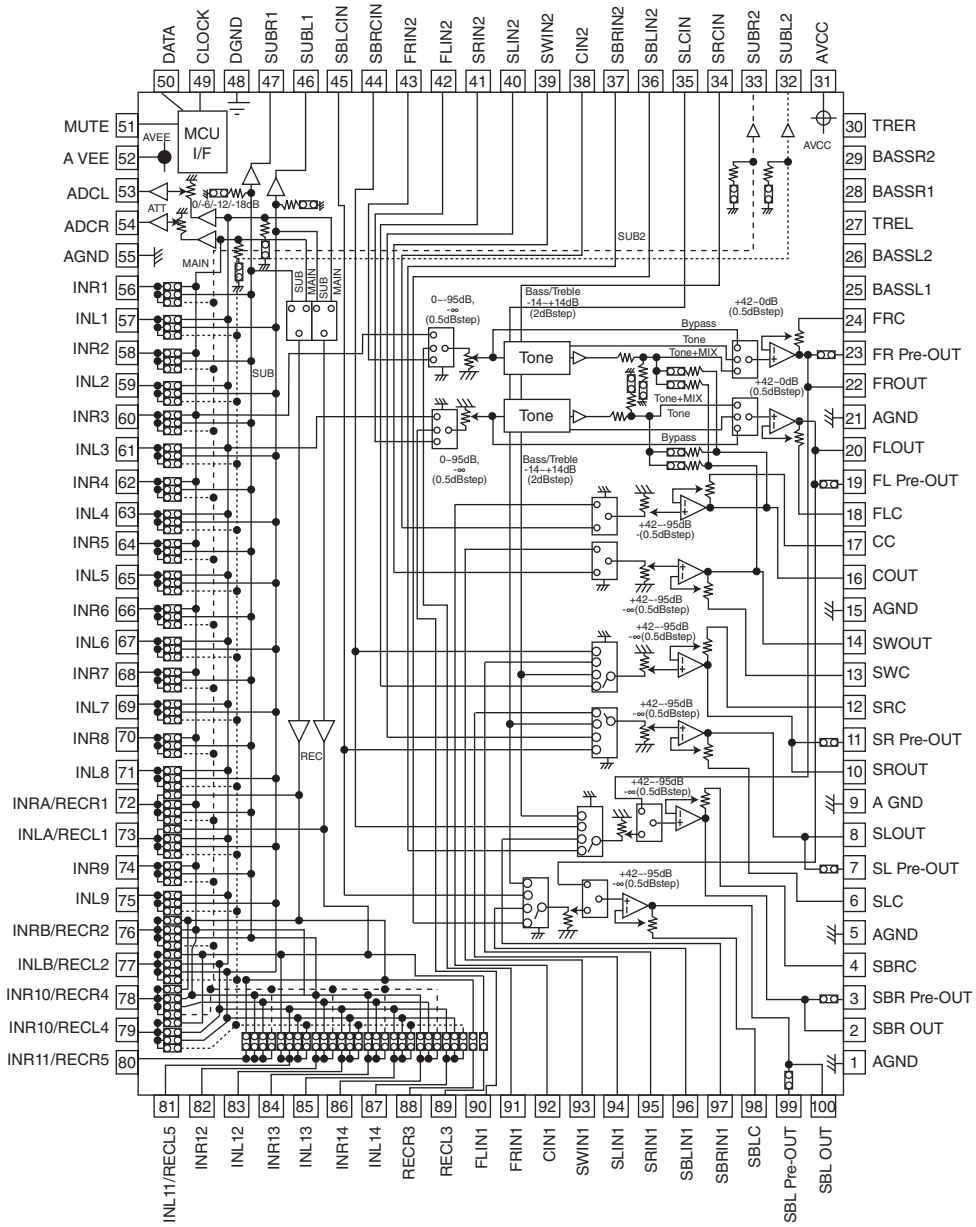
Features

- 8 channels independent electronic volume (+42 to –95dB/0.5dB step, –∞dB)
- L/R channel 16 input selector
- Multi channel input: 7.1 channels input
- Tone control Bass: –14 to + 14dB(2dB step), Treble: –14 to + 14dB(2dB step)
- Can use 5 input for REC output
- Built-in ADC output (Input Att: 0/ –6/ –12/ –18dB)

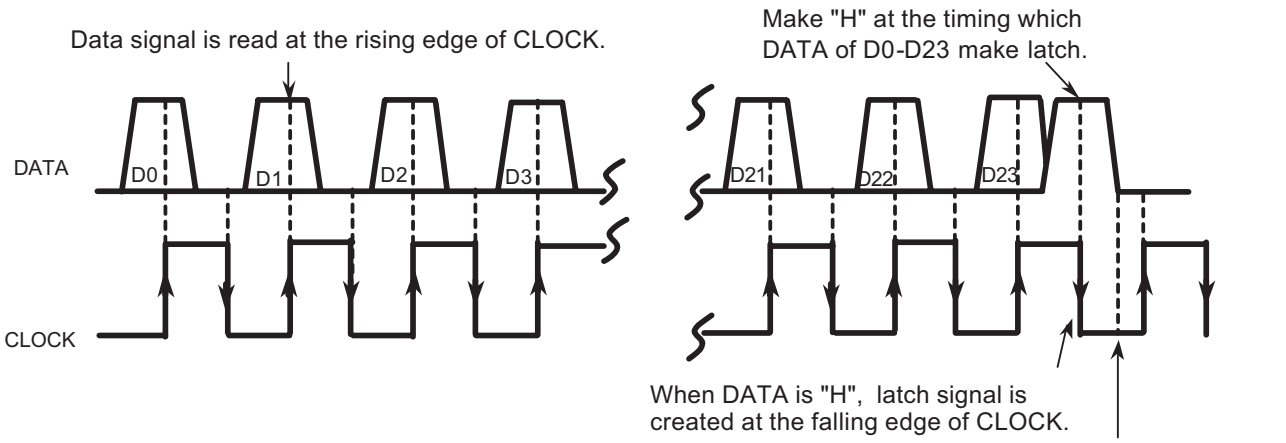
Application

Receiver, AV amp, Home theater, Mini stereo etc.

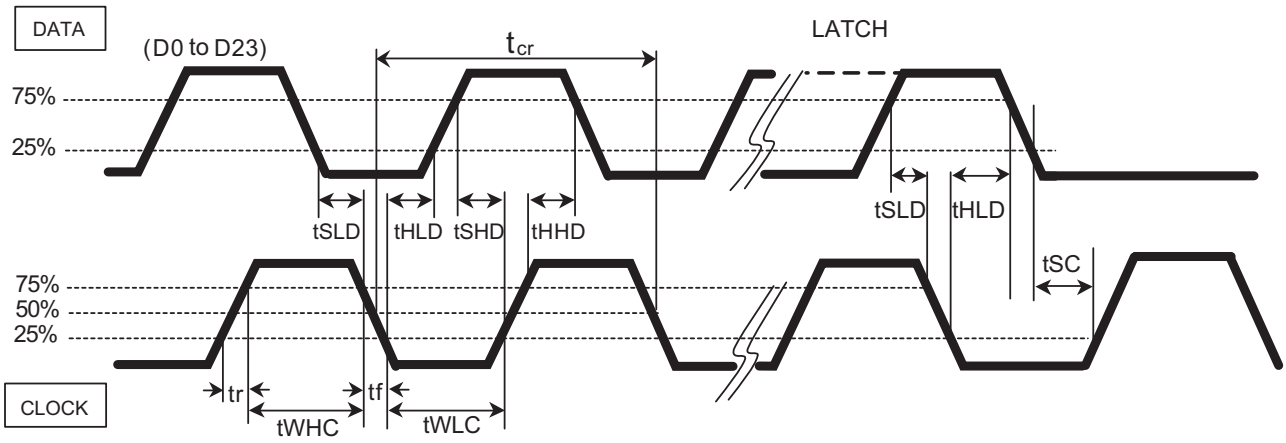
Block Diagram and Pin Configuration



Relationship Between Data and Clock



Clock and Data Timings



Timing Definition of Digital Block

Parameter	Symbol	Limits			Unit
		Min	Typ	Max	
CLOCK cycle time	tcr	8	—	—	µs
CLOCK pulse width ("H" level)	tWHC	3.2	—	—	
CLOCK pulse width ("L" level)	tWLC	3.2	—	—	
Rising time of clock and data	tr	—	—	0.8	
Falling time of clock and data	tf	—	—	0.8	
DATA setup time (Rising time of clock)	tSHD	1.6	—	—	
DATA setup time (Falling time of clock)	tSLD	1.6	—	—	
DATA hold time ("H" level)	tHHD	1.6	—	—	
DATA hold time ("L" level)	tHLD	1.6	—	—	
CLOCK setup time	tSC	1.6	—	—	

Data Control Specification

Basic Structure of Control Data
<<---- Input Direction

D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20	D21	D22	D23
Data																					Select Address		
D0a	D1a	D2a	D3a	D4a	D5a	D6a	D7a	D8a	D9a	D10a	D11a	D12a	D13a	D14a	D15a	D16a	D17a	D18a	D19a	D20a	D21a	D22a	D23a
INPUT MAIN				INPUT SUB				L/R Vol INPUT							BASS (-14..+14dB)					REC I/O	0	0	1
D0b	D1b	D2b	D3b	D4b	D5b	D6b	D7b	D8b	D9b	D10b	D11b	D12b	D13b	D14b	D15b	D16b	D17b	D18b	D19b	D20b	D21b	D22b	D23b
FLch Volume (0..-95dB)								FLch Volume (0..+42dB)							TREBLE (-14..+14dB)					0	0	1	0
D0c	D1c	D2c	D3c	D4c	D5c	D6c	D7c	D8c	D9c	D10c	D11c	D12c	D13c	D14c	D15c	D16c	D17c	D18c	D19c	D20c	D21c	D22c	D23c
FRch Volume (0..-95dB)								FRch Volume (0..+42dB)							REC 1	REC 2	REC 3	REC 4	REC 5	REC M/S	0	1	1
D0d	D1d	D2d	D3d	D4d	D5d	D6d	D7d	D8d	D9d	D10d	D11d	D12d	D13d	D14d	D15d	D16d	D17d	D18d	D19d	D20d	D21d	D22d	D23d
Cch Volume (-95..+42dB)									SWch Volume (-95..+42dB)									C/SW V	ATT		1	0	0
D0e	D1e	D2e	D3e	D4e	D5e	D6e	D7e	D8e	D9e	D10e	D11e	D12e	D13e	D14e	D15e	D16e	D17e	D18e	D19e	D20e	D21e	D22e	D23e
SLch Volume (-95..+42dB)									SRch Volume (-95..+42dB)									SL/SR Vol INPUT		0	1	0	1
D0f	D1f	D2f	D3f	D4f	D5f	D6f	D7f	D8f	D9f	D10f	D11f	D12f	D13f	D14f	D15f	D16f	D17f	D18f	D19f	D20f	D21f	D22f	D23f
																		Bypass	Mix	0	1	1	0
D0g	D1g	D2g	D3g	D4g	D5g	D6g	D7g	D8g	D9g	D10g	D11g	D12g	D13g	D14g	D15g	D16g	D17g	D18g	D19g	D20g	D21g	D22g	D23g
																				0	1	1	1
D0h	D1h	D2h	D3h	D4h	D5h	D6h	D7h	D8h	D9h	D10h	D11h	D12h	D13h	D14h	D15h	D16h	D17h	D18h	D19h	D20h	D21h	D22h	D23h
																				0	0	0	0

Setting Code (cont.)
Tone Control (Bass/Treble)

	Bass	D15a	D16a	D17a	D18a
	Treble	D15b	D16b	D17b	D18b
+14dB		1	1	1	1
+12dB		1	1	1	0
+10dB		1	1	0	1
+8dB		1	1	0	0
+6dB		1	0	1	1
+4dB		1	0	1	0
+2dB		1	0	0	1
0dB		0	0	0	0
-2dB		0	0	0	1
-4dB		0	0	1	0
-6dB		0	0	1	1
-8dB		0	1	0	0
-10dB		0	1	0	1
-12dB		0	1	1	0
-14dB		0	1	1	1

Input Selector

	SUB	D4a	D5a	D6a	D7a
	MAIN	D0a	D1a	D2a	D3a
IN1		0	0	0	0
IN2		0	0	0	1
IN3		0	0	1	0
IN4		0	0	1	1
IN5		0	1	0	0
IN6		0	1	0	1
IN7		0	1	1	0
IN8		0	1	1	1
IN9		1	0	0	0
IN10		1	0	0	1
IN11		1	0	1	0
IN12		1	1	0	1
IN13		1	1	1	0
IN14		1	1	1	1
IF D20a = 1					
INA		1	0	1	1
INB		1	1	0	0

L/R Vol INPUT

	D8a	D9a
Bypass MAIN	0	0
Multi IN1	0	1
Multi IN2	1	1

SL/SR Vol INPUT

	D18e	D19e
Multi IN1	0	0
Multi IN2	0	1
S(R/L)CIN	1	0
SB(R/L)CIN	1	1

ATT out ADC

	D19d	D20d
0 dB	0	0
-6 dB	0	1
-12 dB	1	0
-18 dB	1	1

REC I/O

	D20a
REC Output	0
REC Input	1

Mix/Tone

	D19f
Tone	0
Tone + Mix	1

Bypass/Tone

	D18f
Bypass	0
Tone	1

C/SW Vol INPUT

	D18d
Multi IN1	0
Multi IN2	1

REC input Main or Sub

	D20c
MAIN	0
SUB	1

Volume (0..-95dB)

	FLch		D0b	D1b	D2b	D3b	D4b	D5b	D6b	D7b
	FRch		D0c	D1c	D2c	D3c	D4c	D5c	D6c	D7c
	Cch	D0d	D1d	D2d	D3d	D4d	D5d	D6d	D7d	D8d
	SWch	D9d	D10d	D11d	D12d	D13d	D14d	D15d	D16d	D17d
	SLch	D0e	D1e	D2e	D3e	D4e	D5e	D6e	D7e	D8e
	SRch	D9e	D10e	D11e	D12e	D13e	D14e	D15e	D16e	D17e
DEC	dB (0..-95)									
0	0,0	0	0	0	0	0	0	0	0	0
1	-0,5	0	0	0	0	0	0	0	0	1
2	-1,0	0	0	0	0	0	0	0	1	0
3	-1,5	0	0	0	0	0	0	0	1	1
4	-2,0	0	0	0	0	0	0	1	0	0
5	-2,5	0	0	0	0	0	0	1	0	1
6	-3,0	0	0	0	0	0	0	1	1	0
7	-3,5	0	0	0	0	0	0	1	1	1
8	-4,0	0	0	0	0	0	1	0	0	0
9	-4,5	0	0	0	0	0	1	0	0	1
10	-5,0	0	0	0	0	0	1	0	1	0
11	-5,5	0	0	0	0	0	1	0	1	1
12	-6,0	0	0	0	0	0	1	1	0	0
13	-6,5	0	0	0	0	0	1	1	0	1
14	-7,0	0	0	0	0	0	1	1	1	0
15	-7,5	0	0	0	0	0	1	1	1	1
16	-8,0	0	0	0	0	1	0	0	0	0
17	-8,5	0	0	0	0	1	0	0	0	1
18	-9,0	0	0	0	0	1	0	0	1	0
19	-9,5	0	0	0	0	1	0	0	1	1
20	-10,0	0	0	0	0	1	0	1	0	0
21	-10,5	0	0	0	0	1	0	1	0	1
22	-11,0	0	0	0	0	1	0	1	1	0
23	-11,5	0	0	0	0	1	0	1	1	1
24	-12,0	0	0	0	0	1	1	0	0	0
25	-12,5	0	0	0	0	1	1	0	0	1
26	-13,0	0	0	0	0	1	1	0	1	0
27	-13,5	0	0	0	0	1	1	0	1	1
28	-14,0	0	0	0	0	1	1	1	0	0
29	-14,5	0	0	0	0	1	1	1	0	1
30	-15,0	0	0	0	0	1	1	1	1	0
31	-15,5	0	0	0	0	1	1	1	1	1
32	-16,0	0	0	0	1	0	0	0	0	0
33	-16,5	0	0	0	1	0	0	0	0	1
34	-17,0	0	0	0	1	0	0	0	1	0
35	-17,5	0	0	0	1	0	0	0	1	1
36	-18,0	0	0	0	1	0	0	1	0	0
37	-18,5	0	0	0	1	0	0	1	0	1
38	-19,0	0	0	0	1	0	0	1	1	0
39	-19,5	0	0	0	1	0	0	1	1	1
40	-20,0	0	0	0	1	0	1	0	0	0
41	-20,5	0	0	0	1	0	1	0	0	1
42	-21,0	0	0	0	1	0	1	0	1	0
43	-21,5	0	0	0	1	0	1	0	1	1
44	-22,0	0	0	0	1	0	1	1	0	0
45	-22,5	0	0	0	1	0	1	1	0	1
46	-23,0	0	0	0	1	0	1	1	1	0
47	-23,5	0	0	0	1	0	1	1	1	1
48	-24,0	0	0	0	1	1	0	0	0	0
49	-24,5	0	0	0	1	1	0	0	0	1
50	-25,0	0	0	0	1	1	0	0	1	0
51	-25,5	0	0	0	1	1	0	0	1	1
52	-26,0	0	0	0	1	1	0	1	0	0
53	-26,5	0	0	0	1	1	0	1	0	1
54	-27,0	0	0	0	1	1	0	1	1	0
55	-27,5	0	0	0	1	1	0	1	1	1
56	-28,0	0	0	0	1	1	1	0	0	0
57	-28,5	0	0	0	1	1	1	0	0	1
58	-29,0	0	0	0	1	1	1	0	1	0
59	-29,5	0	0	0	1	1	1	0	1	1
60	-30,0	0	0	0	1	1	1	1	0	0
61	-30,5	0	0	0	1	1	1	1	0	1
62	-31,0	0	0	0	1	1	1	1	1	0
63	-31,5	0	0	0	1	1	1	1	1	1
64	-32,0	0	0	1	0	0	0	0	0	0
65	-32,5	0	0	1	0	0	0	0	0	1
66	-33,0	0	0	1	0	0	0	0	1	0
67	-33,5	0	0	1	0	0	0	0	1	1
68	-34,0	0	0	1	0	0	0	1	0	0
69	-34,5	0	0	1	0	0	0	1	0	1
70	-35,0	0	0	1	0	0	0	1	1	0
71	-35,5	0	0	1	0	0	0	1	1	1
72	-36,0	0	0	1	0	0	1	0	0	0
73	-36,5	0	0	1	0	0	1	0	0	1
74	-37,0	0	0	1	0	0	1	0	1	0
75	-37,5	0	0	1	0	0	1	0	1	1
76	-38,0	0	0	1	0	0	1	1	0	0
77	-38,5	0	0	1	0	0	1	1	0	1
78	-39,0	0	0	1	0	0	1	1	1	0
79	-39,5	0	0	1	0	0	1	1	1	1
80	-40,0	0	0	1	0	1	0	0	0	0
81	-40,5	0	0	1	0	1	0	0	0	1
82	-41,0	0	0	1	0	1	0	0	1	0
83	-41,5	0	0	1	0	1	0	0	1	1
84	-42,0	0	0	1	0	1	0	1	0	0
85	-42,5	0	0	1	0	1	0	1	0	1
86	-43,0	0	0	1	0	1	0	1	1	0
87	-43,5	0	0	1	0	1	0	1	1	1
88	-44,0	0	0	1	0	1	1	0	0	0
89	-44,5	0	0	1	0	1	1	0	0	1
90	-45,0	0	0	1	0	1	1	0	1	0
91	-45,5	0	0	1	0	1	1	0	1	1
92	-46,0	0	0	1	0	1	1	1	0	0
93	-46,5	0	0	1	0	1	1	1	0	1
94	-47,0	0	0	1	0	1	1	1	1	0
95	-47,5	0	0	1	0	1	1	1	1	1
96	-48,0	0	0	1	1	0	0	0	0	0
97	-48,5	0	0	1	1	0	0	0	0	1
98	-49,0	0	0	1	1	0	0	0	1	0
99	-49,5	0	0	1	1	0	0	0	1	1
100	-50,0	0	0	1	1	0	0	1	0	0
101	-50,5	0	0	1	1	0	0	1	0	1
102	-51,0	0	0	1	1	0	0	1	1	0
103	-51,5	0	0	1	1	0	0	1	1	1
104	-52,0	0	0	1	1	0	1	0	0	0
105	-52,5	0	0	1	1	0	1	0	0	1
106	-53,0	0	0	1	1	0	1	0	1	0
107	-53,5	0	0	1	1	0	1	0	1	1
108	-54,0	0	0	1	1	0	1	1	0	0
109	-54,5	0	0	1	1	0	1	1	0	1
110	-55,0	0	0	1	1	0	1	1	1	0
111	-55,5	0	0	1	1	0	1	1	1	1
112	-56,0	0	0	1	1	1	0	0	0	0
113	-56,5	0	0	1	1	1	0	0	0	1
114	-57,0	0	0	1	1	1	0	0	1	0
115	-57,5	0	0	1	1	1	0	0	1	1
116	-58,0	0	0	1	1	1	0	1	0	0
117	-58,5	0	0	1	1	1	0	1	0	1
118	-59,0	0	0	1	1	1	0	1	1	0
119	-59,5	0	0	1	1	1	0	1	1	1
120	-60,0	0	0	1	1	1	1	0	0	0
121	-60,5	0	0	1	1	1	1	0	0	1
122	-61,0	0	0	1	1	1	1	0	1	0
123	-61,5	0	0	1	1	1	1	0	1	1
124	-62,0	0	0	1	1	1	1	1	0	0
125	-62,5	0	0	1	1	1	1	1	0	1
126	-63,0	0	0	1	1	1	1	1	1	0
127	-63,5	0	0	1	1	1	1	1	1	1
128	-64,0	0	1	0	0	0	0	0	0	0
129	-64,5	0	1	0	0	0	0	0	0	1
130	-65,0	0	1	0	0	0	0	0	1	0
131	-65,5	0	1	0	0	0	0	0	1	1
132	-66,0	0	1	0	0	0	0	1	0	0
133	-66,5	0	1	0	0	0	0	1	0	1
134	-67,0	0	1	0	0	0	0	1	1	0
135	-67,5	0	1	0	0	0	0	1	1	1
136	-68,0	0	1	0	0	0	1	0	0	0
137	-68,5	0	1	0	0	0	1	0	0	1
138	-69,0	0	1	0	0	0	1	0	1	0
139	-69,5	0	1	0	0	0	1	0	1	1
140	-70,0	0	1	0	0	0	1	1	0	0
141	-70,5	0	1	0	0	0	1	1	0	1
142	-71,0	0	1	0	0	0	1	1	1	0
143	-71,5	0	1	0	0	0	1	1	1	1
144	-72,0	0	1	0	0	1	0	0	0	0
145	-72,5	0	1	0	0	1	0	0	0	1
146	-73,0	0	1	0	0	1	0	0	1	0
147	-73,5	0	1	0	0	1	0	0	1	1
148	-74,0	0	1	0	0	1	0	1	0	0
149	-74,5	0	1	0	0	1	0	1	0	1
150	-75,0	0	1	0	0	1	0	1	1	0
151	-75,5	0	1	0	0	1	0	1	1	1
152	-76,0	0	1	0	0	1	1	0	0	0
153	-76,5	0	1	0	0	1	1	0	0	1
154	-77,0	0	1	0	0	1	1	0	1	0
155	-77,5	0	1	0	0	1	1	0	1	1
156	-78,0	0	1	0	0	1	1	1	0	0
157	-78,5	0	1	0	0	1	1	1	0	1
158	-79,0	0	1	0	0	1	1	1	1	0
159	-79,5	0	1	0	0	1	1	1	1	1
160	-80,0	0	1	0	1	0	0	0	0	0
161	-80,5	0	1	0	1	0	0	0	0	1
162	-81,0	0	1	0	1	0	0	0	1	0
163	-81,5	0	1	0	1	0	0	0	1	1
164	-82,0	0	1	0	1	0	0	1	0	0
165	-82,5	0	1	0	1	0	0	1	0	1
166	-83,0	0	1	0	1	0	0	1	1	0
167	-83,5	0	1	0	1	0	0	1	1	1
168	-84,0	0	1	0	1	0	1	0	0	0
169	-84,5	0	1	0	1	0	1	0	0	1
170	-85,0	0	1	0	1	0	1	0	1	0
171	-85,5	0	1	0	1	0	1	0	1	1
172	-86,0	0	1	0	1	0	1	1	0	0
173	-86,5	0	1	0	1	0	1	1	0	1
174	-87,0	0	1	0	1	0	1	1	1	0
175	-87,5	0	1	0	1	0	1	1	1	1
176	-88,0	0	1	0	1	1	0	0	0	0
177	-88,5	0	1	0	1	1	0	0	0	1
178	-89,0	0	1	0	1	1	0	0	1	0
179	-89,5	0	1	0	1	1	0	0	1	1
180	-90,0	0	1	0	1	1	0	1	0	0
181	-90,5	0	1	0	1	1	0	1	0	1
182	-91,0	0	1	0	1	1	0	1	1	0
183	-91,5	0	1	0	1	1	0	1	1	1
184	-92,0	0	1	0	1	1	1	0	0	0
185	-92,5	0	1	0	1	1	1	0	0	1
186	-93,0	0	1	0	1	1	1	0	1	0
187	-93,5	0	1	0	1	1	1	0	1	1
188	-94,0	0	1	0	1	1	1	1	0	0
189	-94,5	0	1	0	1	1	1	1	0	1
190	-95,0	0	1	0	1	1	1	1	1	0
---	I	0	I	I	I	I	I	I	I	I
255	-∞	0	1	1	1	1	1	1	1	1

Volume (0..+42dB)

		FLch	D8b	D9b	D10b	D11b	D12b	D13b	D14b
		FRch	D8c	D9c	D10c	D11c	D12c	D13c	D14c
DEC	dB (0..+42)								
0	0,0		0	0	0	0	0	0	0
1	0,5		0	0	0	0	0	0	1
2	1,0		0	0	0	0	0	1	0
3	1,5		0	0	0	0	0	1	1
4	2,0		0	0	0	0	1	0	0
5	2,5		0	0	0	0	1	0	1
6	3,0		0	0	0	0	1	1	0
7	3,5		0	0	0	0	1	1	1
8	4,0		0	0	0	1	0	0	0
9	4,5		0	0	0	1	0	0	1
10	5,0		0	0	0	1	0	1	0
11	5,5		0	0	0	1	0	1	1
12	6,0		0	0	0	1	1	0	0
13	6,5		0	0	0	1	1	0	1
14	7,0		0	0	0	1	1	1	0
15	7,5		0	0	0	1	1	1	1
16	8,0		0	0	1	0	0	0	0
17	8,5		0	0	1	0	0	0	1
18	9,0		0	0	1	0	0	1	0
19	9,5		0	0	1	0	0	1	1
20	10,0		0	0	1	0	1	0	0
21	10,5		0	0	1	0	1	0	1
22	11,0		0	0	1	0	1	1	0
23	11,5		0	0	1	0	1	1	1
24	12,0		0	0	1	1	0	0	0
25	12,5		0	0	1	1	0	0	1
26	13,0		0	0	1	1	0	1	0
27	13,5		0	0	1	1	0	1	1
28	14,0		0	0	1	1	1	0	0
29	14,5		0	0	1	1	1	0	1
30	15,0		0	0	1	1	1	1	0
31	15,5		0	0	1	1	1	1	1
32	16,0		0	1	0	0	0	0	0
33	16,5		0	1	0	0	0	0	1
34	17,0		0	1	0	0	0	1	0
35	17,5		0	1	0	0	0	1	1
36	18,0		0	1	0	0	1	0	0
37	18,5		0	1	0	0	1	0	1
38	19,0		0	1	0	0	1	1	0
39	19,5		0	1	0	0	1	1	1
40	20,0		0	1	0	1	0	0	0
41	20,5		0	1	0	1	0	0	1
42	21,0		0	1	0	1	0	1	0
43	21,5		0	1	0	1	0	1	1
44	22,0		0	1	0	1	1	0	0
45	22,5		0	1	0	1	1	0	1
46	23,0		0	1	0	1	1	1	0
47	23,5		0	1	0	1	1	1	1
48	24,0		0	1	1	0	0	0	0
49	24,5		0	1	1	0	0	0	1
50	25,0		0	1	1	0	0	1	0
51	25,5		0	1	1	0	0	1	1
52	26,0		0	1	1	0	1	0	0
53	26,5		0	1	1	0	1	0	1
54	27,0		0	1	1	0	1	1	0
55	27,5		0	1	1	0	1	1	1
56	28,0		0	1	1	1	0	0	0
57	28,5		0	1	1	1	0	0	1
58	29,0		0	1	1	1	0	1	0
59	29,5		0	1	1	1	0	1	1
60	30,0		0	1	1	1	1	0	0
61	30,5		0	1	1	1	1	0	1
62	31,0		0	1	1	1	1	1	0
63	31,5		0	1	1	1	1	1	1
64	32,0		1	0	0	0	0	0	0
65	32,5		1	0	0	0	0	0	1
66	33,0		1	0	0	0	0	1	0
67	33,5		1	0	0	0	0	1	1
68	34,0		1	0	0	0	1	0	0
69	34,5		1	0	0	0	1	0	1
70	35,0		1	0	0	0	1	1	0
71	35,5		1	0	0	0	1	1	1
72	36,0		1	0	0	1	0	0	0
73	36,5		1	0	0	1	0	0	1
74	37,0		1	0	0	1	0	1	0
75	37,5		1	0	0	1	0	1	1
76	38,0		1	0	0	1	1	0	0
77	38,5		1	0	0	1	1	0	1
78	39,0		1	0	0	1	1	1	0
79	39,5		1	0	0	1	1	1	1
80	40,0		1	0	1	0	0	0	0
81	40,5		1	0	1	0	0	0	1
82	41,0		1	0	1	0	0	1	0
83	41,5		1	0	1	0	0	1	1
84	42,0		1	0	1	0	1	0	0

Volume (0..+42dB)

	Cch	D0d	D1d	D2d	D3d	D4d	D5d	D6d	D7d	D8d
	SWch	D9d	D10d	D11d	D12d	D13d	D14d	D15d	D16d	D17d
	SLch	D0e	D1e	D2e	D3e	D4e	D5e	D6e	D7e	D8e
	SRch	D9e	D10e	D11e	D12e	D13e	D14e	D15e	D16e	D17e
DEC	dB (0..+42)									
384	0,0	1	1	0	0	0	0	0	0	0
385	0,5	1	1	0	0	0	0	0	0	1
386	1,0	1	1	0	0	0	0	0	1	0
387	1,5	1	1	0	0	0	0	0	1	1
388	2,0	1	1	0	0	0	0	1	0	0
389	2,5	1	1	0	0	0	0	1	0	1
390	3,0	1	1	0	0	0	0	1	1	0
391	3,5	1	1	0	0	0	0	1	1	1
392	4,0	1	1	0	0	0	1	0	0	0
393	4,5	1	1	0	0	0	1	0	0	1
394	5,0	1	1	0	0	0	1	0	1	0
395	5,5	1	1	0	0	0	1	0	1	1
396	6,0	1	1	0	0	0	1	1	0	0
397	6,5	1	1	0	0	0	1	1	0	1
398	7,0	1	1	0	0	0	1	1	1	0
399	7,5	1	1	0	0	0	1	1	1	1
400	8,0	1	1	0	0	1	0	0	0	0
401	8,5	1	1	0	0	1	0	0	0	1
402	9,0	1	1	0	0	1	0	0	1	0
403	9,5	1	1	0	0	1	0	0	1	1
404	10,0	1	1	0	0	1	0	1	0	0
405	10,5	1	1	0	0	1	0	1	0	1
406	11,0	1	1	0	0	1	0	1	1	0
407	11,5	1	1	0	0	1	0	1	1	1
408	12,0	1	1	0	0	1	1	0	0	0
409	12,5	1	1	0	0	1	1	0	0	1
410	13,0	1	1	0	0	1	1	0	1	0
411	13,5	1	1	0	0	1	1	0	1	1
412	14,0	1	1	0	0	1	1	1	0	0
413	14,5	1	1	0	0	1	1	1	0	1
414	15,0	1	1	0	0	1	1	1	1	0
415	15,5	1	1	0	0	1	1	1	1	1
416	16,0	1	1	0	1	0	0	0	0	0
417	16,5	1	1	0	1	0	0	0	0	1
418	17,0	1	1	0	1	0	0	0	1	0
419	17,5	1	1	0	1	0	0	0	1	1
420	18,0	1	1	0	1	0	0	1	0	0
421	18,5	1	1	0	1	0	0	1	0	1
422	19,0	1	1	0	1	0	0	1	1	0
423	19,5	1	1	0	1	0	0	1	1	1
424	20,0	1	1	0	1	0	1	0	0	0
425	20,5	1	1	0	1	0	1	0	0	1
426	21,0	1	1	0	1	0	1	0	1	0
427	21,5	1	1	0	1	0	1	0	1	1
428	22,0	1	1	0	1	0	1	1	0	0
429	22,5	1	1	0	1	0	1	1	0	1
430	23,0	1	1	0	1	0	1	1	1	0
431	23,5	1	1	0	1	0	1	1	1	1
432	24,0	1	1	0	1	1	0	0	0	0
433	24,5	1	1	0	1	1	0	0	0	1
434	25,0	1	1	0	1	1	0	0	1	0
435	25,5	1	1	0	1	1	0	0	1	1
436	26,0	1	1	0	1	1	0	1	0	0
437	26,5	1	1	0	1	1	0	1	0	1
438	27,0	1	1	0	1	1	0	1	1	0
439	27,5	1	1	0	1	1	0	1	1	1
440	28,0	1	1	0	1	1	1	0	0	0
441	28,5	1	1	0	1	1	1	0	0	1
442	29,0	1	1	0	1	1	1	0	1	0
443	29,5	1	1	0	1	1	1	0	1	1
444	30,0	1	1	0	1	1	1	1	0	0
445	30,5	1	1	0	1	1	1	1	0	1
446	31,0	1	1	0	1	1	1	1	1	0
447	31,5	1	1	0	1	1	1	1	1	1
448	32,0	1	1	1	0	0	0	0	0	0
449	32,5	1	1	1	0	0	0	0	0	1
450	33,0	1	1	1	0	0	0	0	1	0
451	33,5	1	1	1	0	0	0	0	1	1
452	34,0	1	1	1	0	0	0	1	0	0
453	34,5	1	1	1	0	0	0	1	0	1
454	35,0	1	1	1	0	0	0	1	1	0
455	35,5	1	1	1	0	0	0	1	1	1
456	36,0	1	1	1	0	0	1	0	0	0
457	36,5	1	1	1	0	0	1	0	0	1
458	37,0	1	1	1	0	0	1	0	1	0
459	37,5	1	1	1	0	0	1	0	1	1
460	38,0	1	1	1	0	0	1	1	0	0
461	38,5	1	1	1	0	0	1	1	0	1
462	39,0	1	1	1	0	0	1	1	1	0
463	39,5	1	1	1	0	0	1	1	1	1
464	40,0	1	1	1	0	1	0	0	0	0
465	40,5	1	1	1	0	1	0	0	0	1
466	41,0	1	1	1	0	1	0	0	1	0
467	41,5	1	1	1	0	1	0	0	1	1
468	42,0	1	1	1	0	1	0	1	0	0

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