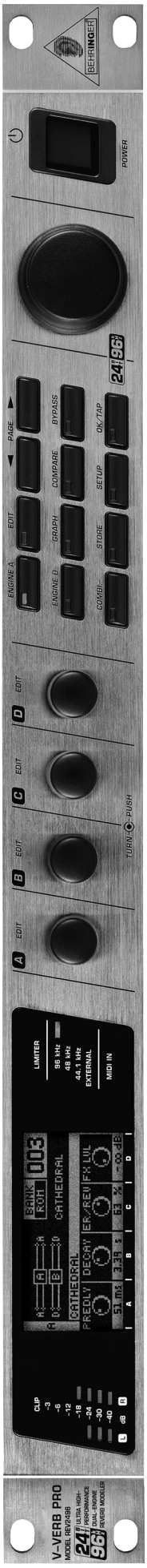
V-VERB PRO REV2496



MIDI Implementation

ENGLISH

Version 1.0 January 2004

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BEHRINGER REV2496 MIDI IMPLEMENTATION

Function	Engine A	Engine B	Combination	Remarks
Midi Channel	1-16	1-16	1-16	
Mode	No	No	No	
Note Number	No	No	No	
Velocity	No	No	No	
After Touch	No	No	No	
Pitch Bender	No	No	No	
Control Change				see Control Change Documentation
0	Yes	Yes	Yes	Bank Select MSB
32	Yes	Yes	Yes	Bank Select LSB
6	Yes	Yes	Yes	DataEntry MSB
38	Yes	Yes	Yes	DataEntry LSB
96	Yes	Yes	Yes	Data Increment
97	Yes	Yes	Yes	Data Decrement
98	Yes	Yes	Yes	Non Registered Parameter LSB
99	Yes	Yes	Yes	Non Registered Parameter MSB
Program Change	Yes	Yes	Yes	Bank 0 : ROM, Bank 1 : USER (Range: 1-100)
System Exclusive	Yes	Yes	Yes	see SysEx Documentation
System Common	No	No	No	
System Real Time	No	No	No	
Running Status	Yes	Yes	Yes	(2s Timeout)

Control Change Documentation

1. V-VERB

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
ER/REV	2	0...100	0...100 %	
ER PREDELAY	3	0...150	0...150 ms	
REV PREDELAY	4	0...150	0...150 ms	
ER WIDTH	5	0...100	0...100 %	
REV WIDTH	6	0...100	0...100 %	
ER TYPE	7	0...7	1...8	*1)
ER SIZE	8	0...99	1...100	
ER DIFF	9	0...29	1...30	
ER LO CUT	10	0...200	10...500 Hz (log.)	
ER HI FREQ	11	0...130	1.0...20 kHz (log.)	
ER HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
MIC DISTANCE	13	0...4	1...5	
MATERIAL	14	0...11	1...12	*2)
SIZE	15	0...99	1...100	
DECAY	16	0...100	0.2..10 sec	*3)
DIFF	18	0...29	1...30	
MOD TYPE	27	0,1	linear, random	
MOD DEPTH	28	0...49	1...50	
MOD SPEED	29	0...99	1...100	
REV LO CUT	30	0...200	10...500 Hz (log.)	
REV HI FREQ	31	0...130	1.0...20 kHz (log.)	
REV HI GAIN	32	0...40	-30...0 dB (-10...0 -> +0.5 dB)	
LO DECAY	33	0...100	X 0.05...x 10 (mult.)	
MID DECAY	34	0...100	X 0.05...x 10 (mult.)	
HI DECAY	35	0...100	X 0.05...x 10 (mult.)	
LO XOVER	36	0...400	20 Hz...20 kHz (log.)	
MID XOVER	37	0...400	20 Hz...20 kHz (log.)	
HI XOVER	38	0...400	20 Hz...20 kHz (log.)	

*1) AUDITORIUM, CATHEDRAL, CONCERT, HALLWAY, HANGAR, CHAMBER, STADIUM, STAGE
*2) TOTAL, GLASS, FIBER, MARBLE, CONCRETE, GYPSUM, WOODEN, PLYWOOD, COTTON, CARPET, VELOUR, ACOUSTIC
*3) min/max. values of DECAY are dependent on SIZE parameter value!

2. CONCERT

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
ER/REV	2	0...100	0...100 %	
ER PREDELAY	3	0...200	0...200 ms	
REV PREDELAY	4	0...200	0...200 ms	
ER TYPE	7	0...3	1...4	*1)
ER SIZE	8	0...99	1...100	
ER DIFF	9	0...29	1...30	
INPUT/ER LO CUT	10	0...200	10...500 Hz (log.)	
INPUT/ER HI	11	0...130	1.0...20 kHz (log.)	
INPUT/ER HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
SIZE	15	0...99	1...100	
DECAY	16	0...100	0.2...5 sec	*2)
DAMP	17	0...130	1...20 kHz (log.)	
DIFF	18	0...29	1...30	
SPREAD	19	0...49	1...50	
BASS MULT.	25	0...100	x 0.25...x 2.0 (mult.)	
BASS FREQ	26	0...200	10...500 Hz (log.)	
MOD TYPE	27	0,1	linear, random	
MOD DEPTH	28	0...49	1...50	
MOD SPEED	29	0...99	1...100	

*1) BACK, MIDDLE, FRONT, BALCONY
*2) max. value of DECAY is dependent on SIZE parameter value!

3. CATHEDRAL

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
ER/REV	2	0...100	0...100 %	
ER PREDELAY	3	0...200	0...200 ms	
PREDELAY	4	0...200	0...200 ms	
ER TYPE	7	0...3	1...4	*1)
ER SIZE	8	0...99	1...100	
ER DIFF	9	0...29	1...30	
INPUT LO CUT	10	0...200	10...500 Hz (log.)	
INPUT HI FREQ	11	0...130	1.0...20 kHz (log.)	
INPUT HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
SIZE	15	0...99	1...100	
DECAY	16	0...100	2...20 sec	*2)
DAMP	17	0...130	1...20 kHz (log.)	
DIFF	18	0...29	1...30	
BASS MULT.	25	0...100	x 0.25...x 2.0 (mult.)	
BASS FREQ	26	0...200	10...500 Hz (log.)	
MOD TYPE	27	0,1	linear, random	
MOD DEPTH	28	0...49	1...50	
MOD SPEED	29	0...99	1...100	

*1) CHURCH, CHAPEL, CATHEDRAL, CASTLE
*2) max. value of DECAY is dependent on SIZE parameter value!

4. THEATER

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
ER/REV	2	0...100	0...100 %	
ER PREDELAY	3	0...200	0...200 ms	
PREDELAY	4	0...200	0...200 ms	
ER TYPE	7	0...7	1...8	*1)
ER SIZE	8	0...99	1...100	
ER DIFF	9	0...29	1...30	
INPUT LO CUT	10	0...200	10...500 Hz (log.)	
INPUT HI FREQ	11	0...130	1.0...20 kHz (log.)	
INPUT HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
SIZE	15	0...99	1...100	
DECAY	16	0...100	0.1...4 sec	*2)
DAMP	17	0...130	1...20 kHz (log.)	
DIFF	18	0...29	1...30	
SPREAD	19	0...49	1...50	
ATTACK	20	0...50	0...50	
BASS MULT.	25	0...100	x 0.25...x 2.0 (mult.)	
MOD TYPE	27	0,1	linear, random	
MOD DEPTH	28	0...49	1...50	
MOD SPEED	29	0...99	1...100	

*1) THEATER, ARENA, CLUB, STADIUM, STAGE, STUDIO, OPERA, AMPHITHEATER
*2) max. value of DECAY is dependent on SIZE parameter value!

5. GOLD PLATE

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
ER/REV	2	0...100	0...100 %	
REV PREDELAY	4	0...200	0...200 ms	
ER DIFF	9	0...29	1...30	
INPUT LO CUT	10	0...200	10...500 Hz (log.)	
INPUT HI FREQ	11	0...130	1.0...20 kHz (log.)	
INPUT HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
SIZE	15	0...99	1...100	
DECAY	16	0...100	0.5...10 sec	*)
DAMP	17	0...130	1...20 kHz (log.)	
DIFF	18	0...29	1...30	
BASS MULT.	25	0...100	x 0.25...x 2.0 (mult.)	
MOD TYPE	27	0,1	linear, random	
MOD DEPTH	28	0...49	1...50	
MOD SPEED	29	0...99	1...100	
GAIN 1	40	0...100	0...100 %	
GAIN 2	41	0...100	0...100 %	
GAIN 3	42	0...100	0...100 %	
GAIN 4	43	0...100	0...100 %	
BALANCE 1	44	0...100	100 L...0...100 R (+2)	
BALANCE 2	45	0...100	100 L...0...100 R (+2)	
BALANCE 3	46	0...100	100 L...0...100 R (+2)	
BALANCE 4	47	0...100	100 L...0...100 R (+2)	
DELAY 1	48	0...500	0...500 ms	
DELAY 2	49	0...500	0...500 ms	
DELAY 3	50	0...500	0...500 ms	
DELAY 4	51	0...500	0...500 ms	

*) max. value of DECAY is dependent on SIZE parameter value!

6. AMBIENCE

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
REV PREDELAY	4	0...200	0...200 ms	
INPUT LO CUT	10	0...200	10...500 Hz (log.)	
INPUT HI FREQ	11	0...130	1.0...20 kHz (log.)	
INPUT HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
SIZE	15	0...99	1...100	
DECAY	16	0...100	0.1...1 sec	*)
DIFF	18	0...29	1...30	
SPREAD	19	0...49	1...50	

*) max. values of DECAY is dependent on SIZE parameter value!

7. GATED REVERB

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
REV PREDELAY	4	0...200	0...200 ms	
INPUT LO CUT	10	0...200	10...500 Hz (log.)	
INPUT HI FREQ	11	0...130	1.0...20 kHz (log.)	
INPUT HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
SIZE	15	0...99	1...100	
DECAY	16	0...100	148...961/967 ms	*)
DIFF	18	0...29	1...30	
ATTACK	20	0...29	1...30	
DENSITY	21	0...50	0...50	
BASS MULT.	25	0...100	x 0.25...x 2.0 (mult.)	
BASS FREQ	26	0...200	10...500 Hz (log.)	

*) min/max. values of DECAY are dependent on SIZE parameter value!

8. REVERSE REVERB

Parameter	NRPN	DataEntry	analogous value	Remarks
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	
REV PREDELAY	4	0...200	0...200 ms	
INPUT LO CUT	10	0...200	10...500 Hz (log.)	
INPUT HI FREQ	11	0...130	1.0...20 kHz (log.)	
INPUT HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	
SIZE	15	0...99	1...100	
DECAY	16	0...100	159...961/969 ms	*)
DIFF	18	0...29	1...30	
RISE	22	0...50	0...50	
BASS MULT.	25	0...100	x 0.25...x 2.0 (mult.)	
BASS FREQ	26	0...200	10...500 Hz (log.)	

*) min/max. values of DECAY are dependent on SIZE parameter value!

9. DELAY

Parameter	NRPN	DataEntry	analogous value
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)
LO FREQ	52	0...200	20...1000 Hz (log.)
LO GAIN	53	0...40	-30...0 dB (-10...0: +0.5 dB)
HI FREQ	54	0...130	1.0...20 kHz (log.)
HI GAIN	55	0...40	-30...0 dB (-10...0: +0.5 dB)
PREDELAY 1	60	0...350	0...350 ms
DELAY 1	61	0...500	0...1000 ms (+2 ms)
FEEDBACK 1	62	0...200	-100...+100 %
GAIN 1	63	0...100	0...100 %
BALANCE 1	67	0...100	100 L...0...100 R (+2)
PREDELAY 2	68	0...350	0...350 ms
DELAY 2	69	0...500	0...1000 ms (+2 ms)
FEEDBACK 2	70	0...200	-100...+100 %
GAIN 2	71	0...100	0...100 %
BALANCE 2	75	0...100	100 L...0...100 R (+2)
FEED - LO FREQ	109	0...200	20...1000 Hz (log.)
FEED - LO GAIN	110	0...40	-30...0 dB (-10...0: +0.5 dB)
FEED - HI FREQ	111	0...130	1.0...20 kHz (log.)
FEED - HI GAIN	112	0...40	-30...0 dB (-10...0: +0.5 dB)

10. XOVER DELAY

Parameter	NRPN	DataEntry	analogous value
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)
LO X FREQ	56	0...200	20...1000 Hz (log.)
LO X TYPE	57	0...2	6, 12, 18 dB
HI X FREQ	58	0...130	1.0...20 kHz (log.)
HI X TYPE	59	0...2	6, 12, 18 dB
PREDELAY 1	60	0...300	0...300 ms
DELAY 1	61	0...600	0...600 ms
FEEDBACK 1	62	0...200	-100...+100 %
GAIN 1	63	0...100	0...100 %
LO GAIN 1	64	0...100	0...100 %
MID GAIN 1	65	0...100	0...100 %
HI GAIN 1	66	0...100	0...100 %
BALANCE 1	67	0...100	100 L...0...100 R (+2)
PREDELAY 2	68	0...300	0...300 ms
DELAY 2	69	0...600	0...600 ms
FEEDBACK 2	70	0...200	-100...+100 %
GAIN 2	71	0...100	0...100 %
LO GAIN 2	72	0...100	0...100 %
MID GAIN 2	73	0...100	0...100 %
HI GAIN 2	74	0...100	0...100 %
BALANCE 2	75	0...100	100 L...0...100 R (+2)
PREDELAY 3	76	0...300	0...300 ms
DELAY 3	77	0...600	0...600 ms
FEEDBACK 3	78	0...200	-100...+100 %
GAIN 3	79	0...100	0...100 %
LO GAIN 3	80	0...100	0...100 %
MID GAIN 3	81	0...100	0...100 %
HI GAIN 3	82	0...100	0...100 %
BALANCE 3	83	0...100	100 L...0...100 R (+2)

11. CHORUS/FLANGER

Parameter	NRPN	DataEntry	analogous value
LO FREQ	52	0...200	20...1000 Hz (log.)
LO GAIN	53	0...40	-30...0 dB (-10...0: +0.5 dB)
HI FREQ	54	0...130	1.0...20 kHz (log.)
HI GAIN	55	0...40	-30...0 dB (-10...0: +0.5 dB)
MIX	84	0...100	0...100 %
GAIN	85	0...24	-6.0...+6.0 dB (+0.5 dB)
STEREO SPREAD	86	0...100	0...100 %
MODE	87	0...3	STEREO, QUAD, HEXA, OCTA
SPEED	95	0...199	1...200
MOD DELAY	96	0...160	0.5...20 ms (log.)
PREDELAY	97	0...50	0...50 ms
DEL SPREAD	98	0...100	0...100 %
PAN MODE	99	0...2	OFF, SYNC, RAND
PAN SPEED	100	0...99	1...100
PHASE/SPREAD	103	0...36...86	PHASE: 180°...0° SPREAD: 2...100%
WAVE	105	0...50	0...50
FEEDBACK	106	0...200	-100...+100 %
LFO MOD	107	0...100	0...100%
CROSS FEED	108	0...100	0...100%
FEED - LO FREQ	109	0...200	20...1000 Hz (log.)
FEED - LO GAIN	110	0...40	-30...0 dB (-10...0: +0.5 dB)
FEED - HI FREQ	111	0...130	1.0...20 kHz (log.)
FEED - HI GAIN	112	0...40	-30...0 dB (-10...0: +0.5 dB)
ENV - MOD	113	0...100	0...100%
ENV - ATTACK	114	0...200	10...1000 ms (log.)
ENV -HOLD	115	0...330	1...2000 ms (log.)
ENV - RELEASE	116	0...200	10...1000 ms (log.)

12. PHASER

Parameter	NRPN	DataEntry	analogous value
MIX	84	0...100	0...100 %
GAIN	85	0...24	-6.0...+6.0 dB (+0.5 dB)
STAGES	88	0...8	4...12
RESONANCE	89	0...100	0...100 %
COLOR	90	0...99	1...100
LO CUT	91	0...200	10...500 Hz (log.)
HI CUT	92	0...130	1.0...20 kHz (log.)
RESO LO CUT	93	0...200	10...500 Hz (log.)
RESO HI CUT	94	0...130	1.0...20 kHz (log.)
SPEED	95	0...99	1...100
DEPTH	101	0...100	0...100 %
RANGE	102	0...99	1...100
PHASE/SPREAD	103	0...36...86	PHASE: 180°...0° SPREAD: 2...100%
LFO RES MOD	104	0...200	-100...+100 %
WAVE	105	0...100	-50...+50
ENV - MOD	113	0...100	0...100%
ENV - ATTACK	114	0...200	10...1000 ms (log.)
ENV -HOLD	115	0...330	1...2000 ms (log.)
ENV - RELEASE	116	0...200	10...1000 ms (log.)

13. TREMOLO

Parameter	NRPN	DataEntry	analogous value
MIX	84	0...100	0...100 %
GAIN	85	0...24	-6.0...+6.0 dB (+0.5 dB)
SPEED	95	0...99	1...100
PHASE	103	0...72	-180°...180°
WAVE	105	0...99	1...100
ENV - MOD	113	0...100	0...100%
ENV - ATTACK	114	0...200	10...1000 ms (log.)
ENV - HOLD	115	0...330	1...2000 ms (log.)
ENV - RELEASE	116	0...200	10...1000 ms (log.)

14. COMPRESSOR

Parameter	NRPN	DataEntry	analogous value	Remarks
THRESHOLD	117	0...120	-60...0 dB (OFF, +0.5 dB)	
RATIO	118	0...15	1:1.1...1:100	
KNEE	119	0...10	0...10	
M-GAIN	120	0...60	0...+30.0 dB (+0.5 dB)	
ATTACK	121	0...200	0.5...50 ms (log.)	
HOLD	122	0...200	20...2000 ms (log.)	
RELEASE	123	0...230	10...2000 ms (log.)	
LOOK AHEAD	124	0...10	0...10 ms	
FILTER MODE	125	0...5	OFF...BP	*1)
FREQ	126	0...400	20 Hz...20 kHz (log.)	
FILTER GAIN	127	0...40	-30...0 dB (-10...0: +0.5 dB)	
QUAL	128	0...50	0.1...1.0 (log.)	
TRANSIENT	129	0...200	OFF, 0.51...50 ms (log.)	
DETECTION TYPE	130	0...20	PEAK, RMS1...RMS20	
XOVER MODE	131	0...6	WIDE...HI 18 dB	*2)
XOVER FREQ	132	0...400	20 Hz...20 kHz (log.)	

*1) OFF, LP12dB (low pass 12 dB), HP12dB (high pass 12 dB), LO SHV (low shelving), HI SHV (high shelving), BP (band pass)
*2) WIDE, LO 6 dB, LO 12 dB, LO 18 dB, HI 6 dB, HI 12 dB, HI 18 dB

ALL PARAMETERS (NRPN for both engines)

Parameter	NRPN	DataEntry	analogous value	Algorithm
DRY	0	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	1...10
FX LEVEL	1	0...71	-∞, -60.0...+0.0 dB (-10...0:+0.5 dB)	1...10
ER/REV	2	0...100	0...100 %	1...5
ER PREDELAY	3	0... 150/200	0... 150/200 ms	1...4
REV PREDELAY	4	0... 150/200	0... 150/200 ms	1...8
ER WIDTH	5	0...100	0...100 %	1
REV WIDTH	6	0...100	0...100 %	1
ER TYPE	7	0...3/7	1...4/8	1...4
ER SIZE	8	0...99	1...100	1...4
ER DIFF	9	0...29	1...30	1...5
ER / INP LO CUT	10	0...200	10...500 Hz (log.)	1...8
ER / INP HI FREQ	11	0...130	1.0...20 kHz (log.)	1...8
ER / INP HI GAIN	12	0...40	-30...0 dB (-10...0: +0.5 dB)	1...8
MIC DISTANCE	13	0...4	1...5	1
MATERIAL	14	0...11	1...12	1
SIZE	15	0...99	1...100	1...8
DECAY	16	0...100	0.1...20 sec	1...8
DAMP	17	0...130	1...20 kHz (log.)	2...5
DIFF	18	0...29	1...30	1...8
SPREAD	19	0...49	1...50	2,4,6
ATTACK	20	0...29/50	1...30 / 0...50	4,7
DENSITY	21	0...50	0...50	7
RISE	22	0...50	0...50	8
BASS MULT.	25	0...100	x 0.25...x 2.0 (mult.)	2...5,7,8
BASS FREQ	26	0...200	10...500 Hz (log.)	2,3,7,8
MOD TYPE	27	0,1	linear, random	1...5
MOD DEPTH	28	0...49	1...50	1...5
MOD SPEED	29	0...99	1...100	1
REV LO CUT	30	0...200	10...500 Hz (log.)	1
REV HI FREQ	31	0...130	1.0...20 kHz (log.)	1
REV HI GAIN	32	0...40	-30...0 dB (-10...0 -> +0.5 dB)	1
LO DECAY	33	0...100	x 0.05...x 10 (mult.)	1
MID DECAY	34	0...100	x 0.05...x 10 (mult.)	1
HI DECAY	35	0...100	x 0.05...x 10 (mult.)	1
LO XOVER	36	0...400	20 Hz...20 kHz (log.)	1
MID XOVER	37	0...400	20 Hz...20 kHz (log.)	1
HI XOVER	38	0...400	20 Hz...20 kHz (log.)	1
GAIN 1	40	0...100	0...100 %	5
GAIN 2	41	0...100	0...100 %	5
GAIN 3	42	0...100	0...100 %	5
GAIN 4	43	0...100	0...100 %	5

Parameter	NRPN	DataEntry	analogous value	Algorithm
BALANCE 1	44	0...100	100 L...0...100 R (+2)	5
BALANCE 2	45	0...100	100 L...0...100 R (+2)	5
BALANCE 3	46	0...100	100 L...0...100 R (+2)	5
BALANCE 4	47	0...100	100 L...0...100 R (+2)	5
DELAY 1	48	0...500	0...500 ms	5
DELAY 2	49	0...500	0...500 ms	5
DELAY 3	50	0...500	0...500 ms	5
DELAY 4	51	0...500	0...500 ms	5
LO FREQ	52	0...200	20...1000 Hz (log.)	9,11
LO GAIN	53	0...40	-30...0 dB (-10...0: +0.5 dB)	9,11
HI FREQ	54	0...130	1.0...20 kHz (log.)	9,11
HI GAIN	55	0...40	-30...0 dB (-10...0: +0.5 dB)	9,11
LO X FREQ	56	0...200	20...1000 Hz (log.)	10
LO X TYPE	57	0...2	6, 12, 18 dB	10
HI X FREQ	58	0...130	1.0...20 kHz (log.)	10
HI X TYPE	59	0...2	6, 12, 18 dB	10
PREDELAY 1	60	0...300/350	0...300/350 ms	9,1
DELAY 1	61	0...600/500	0...600/1000 ms	9,1
FEEDBACK 1	62	0...200	-100...+100 %	9,1
GAIN 1	63	0...100	0...100 %	9,1
LO GAIN 1	64	0...100	0...100 %	10
MID GAIN 1	65	0...100	0...100 %	10
HI GAIN 1	66	0...100	0...100 %	10
BALANCE 1	67	0...100	100 L...0...100 R (+2)	9,1
PREDELAY 2	68	0...300/350	0...300/350 ms	9,1
DELAY 2	69	0...600/500	0...600/1000 ms	9,1
FEEDBACK 2	70	0...200	-100...+100 %	9,1
GAIN 2	71	0...100	0...100 %	9,1
LO GAIN 2	72	0...100	0...100 %	10
MID GAIN 2	73	0...100	0...100 %	10
HI GAIN 2	74	0...100	0...100 %	10
BALANCE 2	75	0...100	100 L...0...100 R (+2)	9,1
PREDELAY 3	76	0...300	0...300 ms	10
DELAY 3	77	0...600	0...600 ms	10
FEEDBACK 3	78	0...200	-100...+100 %	10
GAIN 3	79	0...100	0...100 %	10
LO GAIN 3	80	0...100	0...100 %	10
MID GAIN 3	81	0...100	0...100 %	10
HI GAIN 3	82	0...100	0...100 %	10
BALANCE 3	83	0...100	100 L...0...100 R (+2)	10
MIX	84	0...100	0...100 %	11...13
GAIN	85	0...24	-6.0...+6.0 dB (+0.5 dB)	11...13
STEREO SPREAD	86	0...100	0...100 %	11
MODE	87	0...3	STEREO, QUAD, HEXA, OCTA	11
STAGES	88	0...8	4...12	12
RESONANCE	89	0...100	0...100 %	12
COLOR	90	0...99	1...100	12
LO CUT	91	0...200	10...500 Hz (log.)	12
HI CUT	92	0...130	1.0...20 kHz (log.)	12
RESO LO CUT	93	0...200	10...500 Hz (log.)	12
RESO HI CUT	94	0...130	1.0...20 kHz (log.)	12
SPEED	95	0...99/199	1...100/200	11...13
MOD DELAY	96	0...160	0.5...20 ms (log.)	11
MOD PREDELAY	97	0...50	0...50 ms	11
DEL SPREAD	98	0...100	0...100 %	11
PAN MODE	99	0...2	OFF, SYNC, RAND	11
PAN SPEED	100	0...99	1...100	11
DEPTH	101	0...100	0...100 %	12
RANGE	102	0...99	1...100	12
PHASE/SPREAD	103	0...36...86	PHASE: 180°...0° SPREAD: 2...100%	11,12
PHASE		0...72	-180°...180°	13
LFO RES MOD	104	0...200	-100...+100 %	12
WAVE	105	0...50/99/100	0...50 / 1...100 / -50...50	11...13
FEEDBACK	106	0...200	-100...+100 %	11
LFO MOD	107	0...100	0...100%	11

Parameter	NRPN	DataEntry	analogous value	Algorithm
CROSS FEED	108	0...100	0...100%	11
FEED - LO FREQ	109	0...200	20...1000 Hz (log.)	9,11
FEED - LO GAIN	110	0...40	-30...0 dB (-10...0: +0.5 dB)	9,11
FEED - HI FREQ	111	0...130	1.0...20 kHz (log.)	9,11
FEED - HI GAIN	112	0...40	-30...0 dB (-10...0: +0.5 dB)	9,11
ENV - MOD	113	0...100	0...100%	11...13
ENV - ATTACK	114	0...200	10...1000 ms (log.)	11...13
ENV -HOLD	115	0...330	1...2000 ms (log.)	11...13
ENV - RELEASE	116	0...200	10...1000 ms (log.)	11...13
THRESHOLD	117	0...120	-60...0 dB (OFF, +0.5 dB)	14
RATIO	118	0...15	1:1.1...1:100	14
KNEE	119	0...10	0...10	14
M-GAIN	120	0...60	0...+30.0 dB (+0.5 dB)	14
ATTACK	121	0...200	0.5...50 ms (log.)	14
HOLD	122	0...200	20...2000 ms (log.)	14
RELEASE	123	0...230	10...2000 ms (log.)	14
LOOK AHEAD	124	0...10	0...10 ms	14
FILTER MODE	125	0...5	OFF...BP	14
FREQ	126	0...400	20 Hz...20 kHz (log.)	14
FILTER GAIN	127	0...40	-30...0 dB (-10...0: +0.5 dB)	14
QUAL	128	0...50	0.1...1.0 (log.)	14
TRANSIENT	129	0...200	OFF, 0.51...50 ms (log.)	14
DETECTOR TYPE	130	0...20	PEAK,RMS1...RMS20	14
XOVER MODE	131	0...6	WIDE...HI 18 dB	14
XOVER FREQ	132	0...400	20 Hz...20 kHz (log.)	14

COMBINATION/SETUP PARAMETERS (NRPN for COMBI.)

Parameter	NRPN	DataEntry	analogous value
ROUTING	200	0...9	PARALLEL 1-6,SERIAL 1-4
MASTER INPUT	201	0,1	ANALOG, DIGITAL
INPUT MODE	202	0,1	MONO, STEREO
WET DRY MIX	203	0,1	INTERN, EXTERN
LCD CONRTAST	204	0...15	0...15
CLOCK SOURCE	205	0...4	44.1, 48, 96 kHz, WDCLK, DIG.IN
DIGIN SOURCE	206	0,1	XLR, OPT
DITHER NSHAPE	207	0...6	OFF, 24, 20, 16 BIT, 24, 20, 16 BIT+NSHAPE
OUTPUT FORMAT	208	0,1	S/PDIF, AES 3
ANALOG INPUT	209	0...24	-6.0...+6.0 dB (+0.5 dB)
ANALOG OUTPUT	210	0...24	-6.0...+6.0 dB (+0.5 dB)
DIGITAL INPUT	211	0...24	-6.0...+6.0 dB (+0.5 dB)
DIGITAL OUTPUT	212	0...24	-6.0...+6.0 dB (+0.5 dB)

MENU PARAMETERS (NRPN for COMBI.)

Parameter	NRPN	DataEntry	analogous value	Remarks
ENG A	220	1	PUSH	receive only
EDIT	221	1	PUSH	receive only
PAGE LEFT	222	1	PUSH	receive only
PAGE RIGHT	223	1	PUSH	receive only
ENG B	224	1	PUSH	receive only
GRAPH	225	1	PUSH	receive only
COMPARE	226	0,1	OFF, ON	
BYPASS	227	0,1	OFF, ON	
COMBINATION	228	1	PUSH	receive only
STORE	229	1	PUSH	receive only
SETUP	230	1	PUSH	receive only
OK/TAP	231	1	PUSH	receive only
PUSH ENC. A	232	1	PUSH	receive only
PUSH ENC. B	233	1	PUSH	receive only
PUSH ENC. C	234	1	PUSH	receive only
PUSH ENC. D	235	1	PUSH	receive only
ENCODER A	236	0…n	TURN LEFT (data = steps)	receive only
ENCODER B	237	0…n	TURN LEFT (data = steps)	receive only
ENCODER C	238	0…n	TURN LEFT (data = steps)	receive only
ENCODER D	239	0…n	TURN LEFT (data = steps)	receive only
PRESET	240	0…n	TURN LEFT (data = steps)	receive only
ENCODER A	241	0…n	TURN RIGHT (data = steps)	receive only
ENCODER B	242	0…n	TURN RIGHT (data = steps)	receive only
ENCODER C	243	0…n	TURN RIGHT (data = steps)	receive only
ENCODER D	244	0…n	TURN RIGHT (data = steps)	receive only
PRESET	245	0…n	TURN RIGHT (data = steps)	receive only

GENERAL BEHRINGER SYSEX FORMAT

0xF0, CompanyID, DeviceID, ModelID, Commands & Data, ..., 0xF7

(0xaa denotes a hexadecimal value)

The Behringer **CompanyID** is **0x00, 0x20, 0x32**.

The **DeviceID** acts like a MIDI channel number but allows the use of up to 127 identical devices. The **DeviceID 0x7F** (127 decimal) is used as a broadcast ID (i.e. every device accepts this DeviceID). The Combination MIDI channel number is used as SysEx **DeviceID.**

The **ModelID** is used to identify the product. E.g. the REV2496 **ModelID** is **0x16** (22 decimal). Again the **ModelID 0x7F** will be accepted by every Behringer product. **ModelID 0x00** is used to expand the ModelID to two or more bytes.

Commands & Data

0x01: identify device

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x01, 0xF7**
Response: **0xF0, 0x00, 0x20, 0x32, DeviceID, 0x16, 0x02, asciidata*, 0xF7 asciidata***: n ascii characters identifying the product and software version

0x20: write engine preset or temporary edit buffer

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x20, presetnr MSB, presetnr LSB, len, data*, 0xF7**
presetnr MSB: number of preset (high Byte)
presetnr LSB: number of preset (low Byte)
len: size of data* (for temporary edit buffer: size of one engine data block)
data*: engine preset data block
Comment: Write preset is only accepted while preset-no. is within USER bank
To set temporary edit buffer (includes both engines and combi data) write data with preset-no. 0

0x21: write combination preset

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x21, presetnr MSB, presetnr LSB, len, data*, 0xF7**
presetnr MSB: number of preset (high Byte)
presetnr LSB: number of preset (low Byte)
len: size of data*
data*: combination preset data block
Comment: Write preset is only accepted while preset-no. is within USER bank

0x22: set MIDI channel Engine A

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x22, MidiCh, 0xF7**
MidiCh: MIDI channel (0-15) Engine A

0x23: set MIDI channel Engine B

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x23, MidiCh, 0xF7**
MidiCh: MIDI channel (0-15) Engine B

0x24: set MIDI channel Combination

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x24, MidiCh, 0xF7**
MidiCh: MIDI channel (0-15) Combination

0x60: request engine preset or temporary edit buffer

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x60, presetnr MSB, presetnr LSB, 0xF7**
presetnr MSB: number of requested preset (high Byte)
presetnr LSB: number of requested preset (low Byte)
Response: command 0x20
Comment: To request temporary edit buffer (includes both engines and combi data) set preset-no. to 0

0x61: request combination presets

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x61, preset-no. MSB, preset-no. LSB, 0xF7**
preset-no. MSB: number of requested preset (high Byte)
preset-no. LSB: number of requested preset (low Byte)
Response: command 0x21

0x34/0x35: transfer flash data block

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x34, blockdata[259+37], 0xF7**
blockdata: 7/8 coded: **blockno_h**, **blockno_l**, **crc**, **data[256]**.
crc: crc8 checksum of **blockno_h, blockno_l, data[256]**
blockno: transferred 256 byte data block number (bits 21..15, 14..8 of flash offset); blocks 0-0x1f: boot loader; blocks 0x20..0x5bf: application; blocks 0x5c0-0x5ff: combinations; blocks 0x600-0x67f: presets; blocks 0x680-0x69f: temporary buffers; blocks 0x6a0-0x7ff: hw configuration; block no 0xff00 shows text message data[0..14] on screen
data: data block
Response: **0xF0, 0x00, 0x20, 0x32, DeviceID, 0x16, 0x35, blockno_h**, **blockno_l**, **status, 0xF7**
blockno: transferred 256 byte data block number (bits 21..15, 14..8 of flash offset)
status: 0: flash write executed ok, 1: missing sub block, 2: flash erase failed, 3: flash write failed
Comment: Response is sent only after receiving sub block 15.

0x76: request screen dump

Format: **0xF0, 0x00, 0x20, 0x32, DeviceID, ModelID, 0x76, 0xF7**
Response: **0xF0, 0x00, 0x20, 0x32, DeviceID, 0x16, 0x36, scrndata[16*128], 0xF7**