

1. TRANSMITTED DATA

1-1 CHANNEL MESSAGES [H]:Hex, [D]:Decimal

Status [H]	Second [H] [D]	Third [H]	Description	ENA
Bn	00 (00)	00	Program Bank Select(MSB)	P
Bn	20 (32)	0b	Program Bank Select(LSB)	P
Bn	cc	dd	Control Change	C
Cn	pp	--	Program Change	P

C : Transmit when Control Change Enable
P : Transmit when Program Change Enable

n : MIDI Channel Number (0 ~ 15)
b : Bank (0:User, 1:Preset)
cc : Control Number (0 ~ 120)
dd : Control Data (0 ~ 127 selected as Expression Source
0, 127 selected as Switch Control)
pp : Program Number (0 ~ 127)

1-2 SYSTEM REALTIME MESSAGES

Status[H]	Description
F8	Timing Clock

This message is transmitted when Tempo Mode and MIDI Resolution ON.

1-3 UNIVERSAL SYSTEM EXCLUSIVE MESSAGES

DEVICE INQUIRY REPLY

Byte[H]	Description
F0	Exclusive Status
7E	Non Realtime Message
0n	MIDI Channel (Device ID)
06	Inquiry Message
02	Identity reply
42	KORG ID (Manufacturers ID)
47	DL8000R ID (Family Code (LSB))
00	((MSB))
00	(Member Code (LSB))
00	((MSB))
xx	ROM No. 1 ~ (Minor Ver. (LSB))
00	((MSB))
xx	Soft Version (Major Ver. (LSB))
00	((MSB))
F7	End of Exclusive

This message is transmitted whenever a INQUIRY MESSAGE REQUEST is received.

1-4 SYSTEM EXCLUSIVE MESSAGES

DL8000R System Exclusive

1st Byte = 1111 0000 (F0) : Exclusive Status	Ex.Header
2nd Byte = 0100 0010 (42) : KORG ID	
3rd Byte = 0011 nnnn (3n) : Format ID n:MIDI Channel	
4th Byte = 0100 0111 (47) : DL8000R ID	
5th Byte = 0fff ffff (ff) : Function Code	
6th Byte = 0ddd dddd (dd) : Data	
LastByte = 1111 0111 (F7) : End of Exclusive	

Function ID [Hex]	Description	R	C	D	E
42	MODE DATA	o			
41	PARAMETER CHANGE		o		
40	PROGRAM PARAMETER DUMP	o	o	o	
50	ALL DATA DUMP	o		o	
26	RECEIVE MESSAGE FORMAT ERROR	o			o
23	DATA LOAD COMPLETED				o
24	DATA LOAD ERROR				o
21	WRITE COMPLETED				o
22	WRITE ERROR				o

Transmitted when Exclusive Enable and
R : Request message is received
C : Number changed by knob

D : Data dump by key
E : Exclusive message is received

2.RECOGNIZED RECEIVE DATA

2-1 CHANNEL MESSAGES

Status [Hex]	Second [H] [D]	Third [H]	Description	ENA
9n	kk	vv	Note On	D
Bn	00 (00)	00	Program Bank Select(MSB)	P
Bn	20 (32)	0b	Program Bank Select(LSB)	P
Bn	cc	dd	Cotrol Change	D
Bn	79(121)	00	Reset All Controllers	A
Cn	pp	--	Program Change	P
Dn	aa	--	After Touch	D
En	bb	bb	Pitch Bender	D

n : MIDI Channel Number (0 ~ 15)
kk : Note Number (0 ~ 127)
vv : Velocity (1 ~ 127)
b : Bank (0:User, 1:Preset)
cc : Control Number (0 ~ 120)
dd : Control Data (0 ~ 127 selected as Expression Source
0, 127 selected as Switch Control)
pp : Program Number (0 ~ 127)
aa : After Touch Data (0 ~ 127)
bb : Pitch Bender Data (0 ~ 16383)

ENA = P : Enabled when MIDI Program Change Enable
D : Enabled when MIDI Control Change Enable
A : Always Enabled

2-2 SYSTEM REALTIME MESSAGES

Status[H]	Description
F8	Timing Clock *

This message is received when MIDI note resolution on.

2-3 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)

DEVICE INQUIRY MESSAGE REQUEST

Byte[H]	Description
F0	Exclusive Status
7E	Non Realtime Message
nn	MIDI Channel (Device ID)
06	Inquiry Message (Sub ID 1)
01	Inquiry Request (Sub ID 2)
F7	End of Exclusive

When receive this message and transmits Inquiry Reply Message.
nn = 00 ~ 0F : Receive if same Channel
7F : Receive any Channel

2-4 SYSTEM EXCLUSIVE MESSAGE

Function ID [Hex]	Description
12	MODE REQUEST
10	PROGRAM PARAMETER DUMP REQUEST
0F	ALL DATA DUMP REQUEST
11	PROGRAM WRITE REQUEST
0E	GLOBAL DATA SAVE REQUEST
40	PROGRAM PARAMETER DUMP
50	ALL DATA DUMP
41	PARAMETER CHANGE

Received when Exclusive Enable.

3.MIDI EXCLUSIVE FORMAT (R:Receive, T:Transmit)

(1) MODE REQUEST R

Byte	Description
F0,42,3n,47 0001 0010 (12) 1111 0111 (F7)	EXCLUSIVE HEADER MODE REQUEST 12H EOX

Receives this message, and transmits Func=42 message.

(2) PROGRAM PARAMETER DUMP REQUEST R

Byte	Description
F0,42,3n,47 0001 0000 (10) 1111 0111 (F7)	EXCLUSIVE HEADER PROGRAM PARAMETER DUMP REQUEST 10H EOX

Receives this message, and transmits Func=40 or Func=24 message.

(3) ALL DATA (UTILITY AND ALL PROGRAM) DUMP REQUEST R

Byte	Description
F0,42,3n,47 0000 1111 (0F) 1111 0111 (F7)	EXCLUSIVE HEADER ALL DATA DUMP REQUEST 0FH EOX

Receives this message, and transmits Func=50 or Func=24 message.

(4) PROGRAM WRITE REQUEST R

Byte	Description
F0,42,3n,47 0001 0001 (11) 0ppp pppp 1111 0111 (F7)	EXCLUSIVE HEADER PROGRAM WRITE REQUEST 11H Write Program Number (NOTE 2) EOX

Receives this message, write program data and transmits Func=21 or Func=22 message.

(5) GLOBAL DATA SAVE REQUEST R

Byte	Description
F0,42,3n,47 0000 1110 (0E) 1111 0111 (F7)	EXCLUSIVE HEADER GLOBAL DATA SAVE REQUEST 0EH EOX

Receives this message, save utility data and transmits Func=21 or Func=22 message.

(6) PROGRAM PARAMETER DUMP R, T

Byte	Description
F0,42,3n,47 0100 0000 (40) 0ddd dddd : 1111 0111 (F7)	EXCLUSIVE HEADER PROGRAM PARAMETER DUMP 40H Data (NOTE 3) : EOX

Receives this message and data, and transmits Func=23 or Func=24 message.

Receives Func=10 message, and transmits this message and data.

When the Program number is changed by knob, transmits this message and data.

Transmits this message and data by DUMP key.

(7) ALL DATA (UTILITY AND ALL PROGRAM) DUMP R, T

Byte	Description
F0,42,3n,47 0101 0000 (50) 0ddd dddd : 1111 0111 (F7)	EXCLUSIVE HEADER ALL DATA DUMP 50H Data (NOTE 4) : EOX

Receives this message and data, and transmits Func=23 or Func=24 message.

Receives Func=0F message, and transmits this message and data.

Transmits this message and data by DUMP key.

(8) PARAMETER CHANGE		R, T
Byte	Description	
F0,42,3n,47	EXCLUSIVE HEADER	
0100 0001 (41)	PARAMETER CHANGE	41H
0000 00ds	Main/Sub Stage	(NOTE 6, TABLE 1~3)
0ppp pppp	Main Page Number	(TABLE 1~3)
0ppp pppp	Sub Page Number	(TABLE 1~3)
0vvv vvvv	Value (MSB bit13 ~ 7)	(NOTE 5)
0vvv vvvv	Value (LSB bit 6 ~ 0)	(NOTE 5)
1111 0111 (F7)	EOX	

Receives this message and data, and transmits Func=23 or Func=24 message.

When Parameter is changed by knob, transmits this message and data.

(9) MODE DATA		R, T
Byte	Description	
F0,42,3n,47	EXCLUSIVE HEADER	
0100 0010 (42)	MODE DATA	42H
0000 00mm	Mode Data	(NOTE 1)
1111 0111 (F7)	EOX	

Receives Func=12 message, and transmits this message and data.

(10) DATA FORMAT ERROR		T
Byte	Description	
F0,42,3n,47	EXCLUSIVE HEADER	
0010 0110 (26)	DATA FORMAT ERROR	26H
1111 0111 (F7)	EOX	

Transmits this message when there is an error in MIDI in message.

(11) DATA LOAD COMPLETED		T
Byte	Description	
F0,42,3n,47	EXCLUSIVE HEADER	
0010 0011 (23)	DATA LOAD COMPLETED	23H
1111 0111 (F7)	EOX	

Transmits this message when DATA LOAD, PROCESSING have been completed.

(12) DATA LOAD ERROR		T
Byte	Description	
F0,42,3n,47	EXCLUSIVE HEADER	
0010 0100 (24)	DATA LOAD ERROR	24H
1111 0111 (F7)	EOX	

Transmits this message when DATA LOAD, PROCESSING have not been completed.

(13) WRITE COMPLETED		T
Byte	Description	
F0,42,3n,47	EXCLUSIVE HEADER	
0010 0001 (21)	WRITE COMPLETED	21H
1111 0111 (F7)	EOX	

Transmits this message when DATA WRITE by MIDI has been completed.

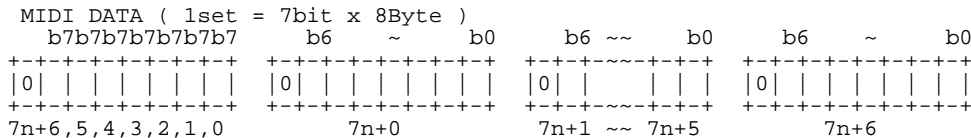
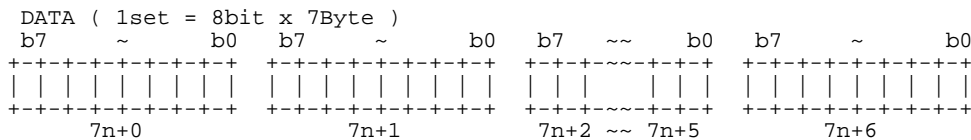
(14) WRITE ERROR		T
Byte	Description	
F0,42,3n,47	EXCLUSIVE HEADER	
0010 0010 (22)	WRITE ERROR	22H
1111 0111 (F7)	EOX	

Transmits this message when DATA WRITE by MIDI has not been completed.

NOTE 1 : mm = 0 : Play Mode
 1 : Edit Mode
 2 : Utility Mode
 3 : Write, Compare Mode

NOTE 2 : ppp pppp = 0 ~ 127

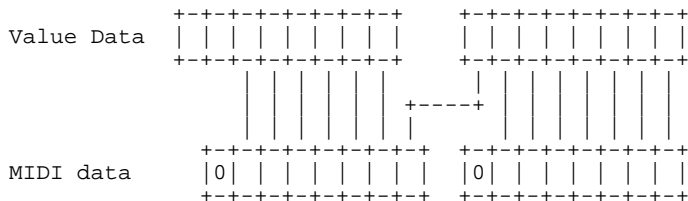
Dump Data Format for NOTE 3 & 4
 n = 0, 1, ...



NOTE 3 : Program Parameter dump format (see TABLE 1)
 [Parameter byte No.00], ... , [Parameter byte No.124]
 125byte = 7x17+6 --> 8x17+(6+1) = 143byte

NOTE 4 : All Data dump format
 [Utility Data (26byte)], (see TABLE 2)
 [Map Data (128byte)], (see TABLE 3)
 [Prog.00 (125byte)], ... , [Prog.127 (125byte)] (see NOTE 3)
 16154byte = 7x2307+5 --> 8x2307+(5+1) = 18462byte

NOTE 5 : Value Data Format



NOTE 6 : s = 0 : Main Parameter Edit
 1 : Sub Parameter Edit

 d = 0 : Display Change Enable
 1 : Display Change Disable

TABLE 1 PROGRAM PARAMETERS

BIT No. *1	PARAMETERS	DATA(HEX) : VALUE	PARAM. No.	EXPRESSION TARGET DATA
0 ~ 7 :	PROGRAM NAME(Head)	20 ~ 60 : ' ' ~ ' '	01,23,00	
88 ~ 95	PROGRAM NAME(Tail)	[ASCII Code]	01,23,0B	
SWITCHES				
96	TEMPO MODE	0:TIME MODE, 1:TEMPO MODE	*2	
97	DIRECT	0:PRE EQ, 1:POST EQ	01,18,1A	
98	LFO	0:OFF, 1:ON	00,16,00	
99	LEFT DELAY IN	0:OFF, 1:ON	01,17,00	
100	RIGHT DELAY IN	0:OFF, 1:ON	01,17,01	
LEFT RHYTHM TYPE				
101 ~ 105	LEFT RHYTHM TYPE	0 ~ 14 : QUARTER NOTE ~ EIGHTH TRIPLET	00,04,00	

LEFT DELAY TIME					
106 ~ 118	LEFT FEEDBACK TAP TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,08,00	
119 ~ 131	LEFT TAP1 TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,05,00	
132 ~ 144	LEFT TAP2 TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,06,00	
145 ~ 157	LEFT TAP3 TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,07,00	
LEFT MIXER					
158 ~ 164	LEFT FEEDBACK TAP LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,0B	06
165 ~ 171	LEFT TAP1 LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,02	03
172 ~ 178	LEFT TAP2 LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,05	04
179 ~ 185	LEFT TAP3 LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,08	05
186 ~ 191	LEFT FEEDBACK TAP PAN	0 ~ 28	: L20 ~ R20	01,18,0C	
192 ~ 197	LEFT TAP1 PAN	0 ~ 28	: L20 ~ R20	01,18,03	
198 ~ 203	LEFT TAP2 PAN	0 ~ 28	: L20 ~ R20	01,18,06	
204 ~ 209	LEFT TAP3 PAN	0 ~ 28	: L20 ~ R20	01,18,09	
210	LEFT FEEDBACK TAP POLARITY	0:+, 1:-		01,18,0D	
211	LEFT TAP1 POLARITY	0:+, 1:-		01,18,04	
212	LEFT TAP2 POLARITY	0:+, 1:-		01,18,07	
213	LEFT TAP3 POLARITY	0:+, 1:-		01,18,0A	
LEFT DELAY TIME MODULATION					
214	LEFT FEEDBACK TAP MOD ON/OFF	0:OFF, 1:ON		01,08,00	
215	LEFT TAP1 MOD ON/OFF	0:OFF, 1:ON		01,05,00	
216	LEFT TAP2 MOD ON/OFF	0:OFF, 1:ON		01,06,00	
217	LEFT TAP3 MOD ON/OFF	0:OFF, 1:ON		01,07,00	
218 ~ 221	LEFT FEEDBACK TAP MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,08,01	
222 ~ 225	LEFT TAP1 MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,05,01	
226 ~ 229	LEFT TAP2 MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,06,01	
230 ~ 233	LEFT TAP3 MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,07,01	
234 ~ 240	LEFT FEEDBACK TAP MOD DEPTH	0 ~ 63	: 0 ~ 99	01,08,02	
241 ~ 247	LEFT TAP1 MOD DEPTH	0 ~ 63	: 0 ~ 99	01,05,02	
248 ~ 254	LEFT TAP2 MOD DEPTH	0 ~ 63	: 0 ~ 99	01,06,02	
255 ~ 261	LEFT TAP3 MOD DEPTH	0 ~ 63	: 0 ~ 99	01,07,02	
262 ~ 274	LEFT FBTAP MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,08,03	
275 ~ 287	LEFT TAP1 MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,05,03	
288 ~ 300	LEFT TAP2 MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,06,03	
301 ~ 313	LEFT TAP3 MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,07,03	
314	LEFT FBTAP MOD POLARITY	0:+, 1:-		01,08,04	
315	LEFT TAP1 MOD POLARITY	0:+, 1:-		01,05,04	
316	LEFT TAP2 MOD POLARITY	0:+, 1:-		01,06,04	
317	LEFT TAP3 MOD POLARITY	0:+, 1:-		01,07,04	
LEFT PRE DELAY					
318 ~ 326	LEFT PRE DELAY	0 ~ 190	: 0 ~ 400ms	00,03,00	
LEFT FEEDBACK					
327 ~ 333	LEFT FEEDBACK	0 ~ 63	: -INF ~ 0dB	00,09,00	00
334	LEFT FEEDBACK POLARITY	0:+, 1:-		01,09,00	
335	(reserved)				
336 ~ 340	LEFT LOW DAMP	0 ~ 1F	: THRU ~ 1KHz	00,0A,00	01

341 ~ 345	LEFT HIGH DAMP	0 ~ 19	: THRU ~ 1KHz	00,0B,00	02
LEFT PRE EQ					
346	LEFT EQ ON/OFF	0:OFF, 1:ON		00,02,00	
347 ~ 352	LEFT EQ LOW GAIN	0 ~ 3C	: -15.0 ~ 15.0dB	01,02,00	
353 ~ 357	LEFT EQ LOW FREQUENCY	0 ~ 1E	: 31.5 ~ 1KHz	01,02,01	
358 ~ 363	LEFT EQ MID GAIN	0 ~ 3C	: -15.0 ~ 15.0dB	01,02,02	
364 ~ 369	LEFT EQ MID FREQUENCY	0 ~ 28	: 80 ~ 8KHz	01,02,03	
370 ~ 376	LEFT EQ MID Q	0 ~ 61	: 0.3 ~ 10.0	01,02,04	
377 ~ 382	LEFT EQ HIGH GAIN	0 ~ 3C	: -15.0 ~ 15.0dB	01,02,05	
383 ~ 387	LEFT EQ HIGH FREQUENCY	0 ~ 18	: 1K ~ 16KHz	01,02,06	
388 ~ 393	LEFT EQ LEVEL	0 ~ 3D	: -INF ~ 6.0dB	01,02,07	
RIGHT RHYTHM TYPE					
394 ~ 398	RIGHT RHYTHM TYPE	0 ~ 14	: QUARTER NOTE ~ EIGHTH TRIPLET	00,0E,00	
RIGHT DELAY TIME					
399 ~ 411	RIGHT FEEDBACK TAP TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,12,00	
412 ~ 424	RIGHT TAP1 TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,0F,00	
425 ~ 437	RIGHT TAP2 TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,10,00	
438 ~ 450	RIGHT TAP3 TIME	0 ~ 1427	: 0.1 ~ 4800ms	00,11,00	
RIGHT MIXER					
451 ~ 457	RIGHT FEEDBACK TAP LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,17	0D
458 ~ 464	RIGHT TAP1 LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,0E	0A
465 ~ 471	RIGHT TAP2 LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,11	0B
472 ~ 478	RIGHT TAP3 LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,14	0C
479 ~ 484	RIGHT FEEDBACK TAP PAN	0 ~ 28	: L20 ~ R20	01,18,18	
485 ~ 490	RIGHT TAP1 PAN	0 ~ 28	: L20 ~ R20	01,18,0F	
491 ~ 496	RIGHT TAP2 PAN	0 ~ 28	: L20 ~ R20	01,18,12	
497 ~ 502	RIGHT TAP3 PAN	0 ~ 28	: L20 ~ R20	01,18,15	
503	RIGHT FEEDBACK TAP POLARITY	0:+, 1:-		01,18,19	
504	RIGHT TAP1 POLARITY	0:+, 1:-		01,18,10	
505	RIGHT TAP2 POLARITY	0:+, 1:-		01,18,13	
506	RIGHT TAP3 POLARITY	0:+, 1:-		01,18,16	
RIGHT DELAY TIME MODULATION					
507	RIGHT FEEDBACKTAP MOD ON/OFF	0:OFF, 1:ON		01,12,00	
508	RIGHT TAP1 MOD ON/OFF	0:OFF, 1:ON		01,0F,00	
509	RIGHT TAP2 MOD ON/OFF	0:OFF, 1:ON		01,10,00	
510	RIGHT TAP3 MOD ON/OFF	0:OFF, 1:ON		01,11,00	
511 ~ 514	RIGHT FEEDBACKTAP MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,12,01	
515 ~ 518	RIGHT TAP1 MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,0F,01	
519 ~ 522	RIGHT TAP2 MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,10,01	
523 ~ 526	RIGHT TAP3 MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,11,01	
527 ~ 533	RIGHT FEEDBACK TAP MOD DEPTH	0 ~ 63	: 0 ~ 99	01,12,02	
534 ~ 540	RIGHT TAP1 MOD DEPTH	0 ~ 63	: 0 ~ 99	01,0F,02	
541 ~ 547	RIGHT TAP2 MOD DEPTH	0 ~ 63	: 0 ~ 99	01,10,02	
548 ~ 554	RIGHT TAP3 MOD DEPTH	0 ~ 63	: 0 ~ 99	01,11,02	
555 ~ 567	RIGHT FBTAP MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,12,03	

568 ~ 580	RIGHT TAP1 MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,0F,03	
581 ~ 593	RIGHT TAP2 MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,10,03	
594 ~ 606	RIGHT TAP3 MOD TARGET TIME	0 ~ 1427	: 0.1 ~ 4800ms	01,11,03	
607	RIGHT FBTAP MOD POLARITY	0:+, 1:-		01,12,04	
608	RIGHT TAP1 MOD POLARITY	0:+, 1:-		01,0F,04	
609	RIGHT TAP2 MOD POLARITY	0:+, 1:-		01,10,04	
610	RIGHT TAP3 MOD POLARITY	0:+, 1:-		01,11,04	
RIGHT PRE DELAY					
611 ~ 619	RIGHT PRE DELAY	0 ~ 190	: 0 ~ 400ms	00,0D,00	
RIGHT FEEDBACK					
620 ~ 626	RIGHT FEEDBACK	0 ~ 63	: -INF ~ 0dB	00,13,00	07
627	RIGHT FEEDBACK POLARITY	0:+, 1:-		01,13,00	
628	(reserved)				
629 ~ 633	RIGHT LOW DAMP	0 ~ 1F	: THRU ~ 1KHz	00,14,00	08
634 ~ 638	RIGHT HIGH DAMP	0 ~ 19	: THRU ~ 1KHz	00,15,00	09
RIGHT PRE EQ					
639	RIGHT EQ ON/OFF	0:OFF, 1:ON		00,0C,00	
640 ~ 645	RIGHT EQ LOW GAIN	0 ~ 3C	: -15.0 ~ 15.0dB	01,0C,00	
646 ~ 650	RIGHT EQ LOW FREQUENCY	0 ~ 1E	: 31.5 ~ 1KHz	01,0C,01	
651 ~ 656	RIGHT EQ MID GAIN	0 ~ 3C	: -15.0 ~ 15.0dB	01,0C,02	
657 ~ 662	RIGHT EQ MID FREQUENCY	0 ~ 28	: 80 ~ 8KHz	01,0C,03	
663 ~ 669	RIGHT EQ MID Q	0 ~ 61	: 0.3 ~ 10.0	01,0C,04	
670 ~ 675	RIGHT EQ HIGH GAIN	0 ~ 3C	: -15.0 ~ 15.0dB	01,0C,05	
676 ~ 680	RIGHT EQ HIGH FREQUENCY	0 ~ 18	: 1K ~ 16KHz	01,0C,06	
681 ~ 686	RIGHT EQ LEVEL	0 ~ 3D	: -INF ~ 6.0dB	01,0C,07	
TEMPO MODULATION					
687	TEMPO MOD ON/OFF	0:OFF, 1:ON		01,01,01	
688 ~ 691	TEMPO MOD SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,01,02	
692 ~ 698	TEMPO MOD DEPTH	0 ~ 63	: 0 ~ 99	01,01,03	
699 ~ 706	TEMPO MOD RANGE	32 ~ D0	: 50 ~ 208	01,01,04	
707	TEMPO MOD POLARITY	0:+, 1:-		01,01,05	
LFO					
708 ~ 715	LFO SPEED	0 ~ AE	: 0.01 ~ 16.0Hz	01,16,00	0E
716 ~ 721	LFO PHASE	0 ~ 24	: 0 ~ 180 deg	01,16,01	0F
722 ~ 724	LFO TYPE	0 ~ 4	: SIN, TRI, EXP, LOG, RND	01,16,02	
725	LFO TRIGGER	0:OFF, 1:ON		01,16,03	
726 ~ 731	LFO TRIGGER THRESHOLD	0 ~ 24	: -36 ~ 0dB	01,16,04	
FEEDBACK TYPE					
732	FEEDBACK TYPE	0:NORMAL, 1:CROSS		00,17,00	
MIXER					
733 ~ 739	DIRECT LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,1B	11
740 ~ 745	DIRECT L/R BALANCE	0 ~ 28	: L20 ~ R20	01,18,1C	
746 ~ 752	DELAY LEVEL	0 ~ 5B	: -INF ~ 0dB	01,18,00	10
753 ~ 758	DELAY L/R BALANCE	0 ~ 28	: L20 ~ R20	01,18,01	
NOTE RESOLUTION					
759 ~ 762	FACTOR	0 ~ B	: 1/4 ~ 4	01,01,00	

				01,19,00
763 ~ 764	TAP RESOLUTION	0 ~ 3	: EIGHTH NOTE ~ WHOLE NOTE	01,19,01
765 ~ 766	AUDIO RESOLUTION	0 ~ 3	: EIGHTH NOTE ~ WHOLE NOTE	01,19,02
767 ~ 769	MIDI RESOLUTION	0 ~ 4	: EIGHTH NOTE ~ OFF	01,19,03
EXPRESSION				
770	EXPRESSION 1 ON/OFF	0:OFF, 1:ON		00,1A,00
771	EXPRESSION 2 ON/OFF	0:OFF, 1:ON		00,1B,00
772	EXPRESSION 3 ON/OFF	0:OFF, 1:ON		00,1C,00
773	EXPRESSION 4 ON/OFF	0:OFF, 1:ON		00,1D,00
774	EXPRESSION 5 ON/OFF	0:OFF, 1:ON		00,1E,00
775	EXPRESSION 6 ON/OFF	0:OFF, 1:ON		00,1F,00
776	EXPRESSION 7 ON/OFF	0:OFF, 1:ON		00,20,00
777	EXPRESSION 8 ON/OFF	0:OFF, 1:ON		00,21,00
778 ~ 783	EXPRESSION 1 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,1A,00
784 ~ 789	EXPRESSION 2 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,1B,00
790 ~ 795	EXPRESSION 3 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,1C,00
796 ~ 801	EXPRESSION 4 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,1D,00
802 ~ 807	EXPRESSION 5 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,1E,00
808 ~ 813	EXPRESSION 6 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,1F,00
814 ~ 819	EXPRESSION 7 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,20,00
820 ~ 825	EXPRESSION 8 TARGET	0 ~ 11	: L FBACK ~ DIR LVL	01,21,00
826 ~ 829	EXPRESSION 1 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,1A,01
830 ~ 833	EXPRESSION 2 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,1B,01
834 ~ 837	EXPRESSION 3 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,1C,01
838 ~ 841	EXPRESSION 4 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,1D,01
842 ~ 845	EXPRESSION 5 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,1E,01
846 ~ 849	EXPRESSION 6 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,1F,01
850 ~ 853	EXPRESSION 7 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,20,01
854 ~ 857	EXPRESSION 8 SOURCE	0 ~ 9	: LFO, ENV, CR1~CR8	01,21,01
858 ~ 864	EXPRESSION 1 DEPTH	0 ~ 63	: 0 ~ 99	01,1A,02
865 ~ 871	EXPRESSION 2 DEPTH	0 ~ 63	: 0 ~ 99	01,1B,02
872 ~ 878	EXPRESSION 3 DEPTH	0 ~ 63	: 0 ~ 99	01,1C,02
879 ~ 885	EXPRESSION 4 DEPTH	0 ~ 63	: 0 ~ 99	01,1D,02
886 ~ 892	EXPRESSION 5 DEPTH	0 ~ 63	: 0 ~ 99	01,1E,02
893 ~ 899	EXPRESSION 6 DEPTH	0 ~ 63	: 0 ~ 99	01,1F,02
900 ~ 906	EXPRESSION 7 DEPTH	0 ~ 63	: 0 ~ 99	01,20,02
907 ~ 913	EXPRESSION 8 DEPTH	0 ~ 63	: 0 ~ 99	01,21,02
914 ~ 922	EXPRESSION 1 RANGE		*3	01,1A,03
923 ~ 931	EXPRESSION 2 RANGE		*3	01,1B,03
932 ~ 940	EXPRESSION 3 RANGE		*3	01,1C,03
941 ~ 949	EXPRESSION 4 RANGE		*3	01,1D,03
950 ~ 958	EXPRESSION 5 RANGE		*3	01,1E,03
959 ~ 967	EXPRESSION 6 RANGE		*3	01,1F,03
968 ~ 976	EXPRESSION 7 RANGE		*3	01,20,03
977 ~ 985	EXPRESSION 8 RANGE		*3	01,21,03
986	EXPRESSION 1 POLARITY	0:+, 1:-		01,1A,04

987	EXPRESSION 2 POLARITY	0:+, 1:-	01,1B,04
988	EXPRESSION 3 POLARITY	0:+, 1:-	01,1C,04
989	EXPRESSION 4 POLARITY	0:+, 1:-	01,1D,04
990	EXPRESSION 5 POLARITY	0:+, 1:-	01,1E,04
991	EXPRESSION 6 POLARITY	0:+, 1:-	01,1F,04
992	EXPRESSION 7 POLARITY	0:+, 1:-	01,20,04
993	EXPRESSION 8 POLARITY	0:+, 1:-	01,21,04
WARP RESOLUTION			
994 ~ 998	WARP RESOLUTION	0 ~ 17 : 0 ~ 20	00,22,00
999	(reserved)		

TABLE 2 UTILITY PARAMETERS

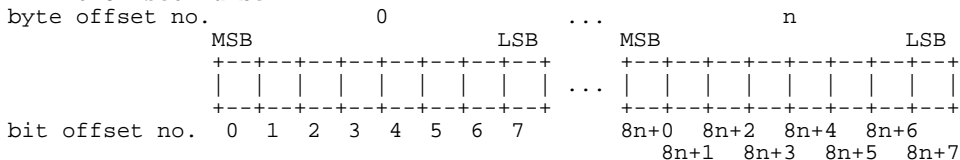
BYTE No. (BIT)	PARAMETERS	DATA(HEX)	VALUE	PARAM. No.
00 BIT7	PROGRAM CHANGE MODE	0:DIRECT, 1:2STEP		01,26,00
BIT6	ABBREVIATION MODE	0:ABBREVIATION, 1:ROTATE		01,29,02
BIT5	MAP ON/OFF	0:OFF, 1:ON		00,27,00
BIT4	CONTROL INITIALIZE	0:DISABLE, 1:ENABLE		01,24,08
BIT3	EDIT L/R SYNC	0:OFF, 1:ON		00,2D,00
BIT2	SEAMLESS	0:OFF, 1:ON		01,26,01
BIT1,0	(reserved)			
01	CONTROLLER 1	00, 01, 04 ~ 80 :	*4	01,24,00
02	CONTROLLER 2	00, 01, 04 ~ 80 :	*4	01,24,01
03	CONTROLLER 3	00, 01, 04 ~ 80 :	*4	01,24,02
04	CONTROLLER 4	00, 01, 04 ~ 80 :	*4	01,24,03
05	CONTROLLER 5	00, 01, 04 ~ 80 :	*4	01,24,04
06	CONTROLLER 6	00, 01, 04 ~ 80 :	*4	01,24,05
07	CONTROLLER 7	00, 01, 04 ~ 80 :	*4	01,24,06
08	CONTROLLER 8	00, 01, 04 ~ 80 :	*4	01,24,07
09	WAKE UP PROGRAM	00 ~ FF : 0 ~ 255		01,26,02
10	ENVELOPE SENS	00 ~ 1E : 0 ~ 30		01,28,00
11	ENVELOPE RELEASE	00 ~ 1E : 0 ~ 30		01,28,01
12	AUDIO TRIGGER THRESHOLD	00 ~ 24 : -36 ~ 0		01,28,02
13	ABBREVIATION TIME	00 ~ 08 : 0 ~ 8		01,29,01
14	DIMMER	00 ~ 07 : 1 ~ 8		01,29,03
15	TIME/TEMPO SW CTRL CHG No.	00 ~ 78 : CONTROL CHANGE 0~120		01,25,06
16	HOLD SW CTRL CHG No.	00 ~ 78 : CONTROL CHANGE 0~120		01,25,07
17	TAP SW CTRL CHG No.	00 ~ 78 : CONTROL CHANGE 0~120		01,25,0A
18	BYPASS SW CTRL CHG No.	00 ~ 78 : CONTROL CHANGE 0~120		01,25,08
19	AUDIO TRIGGER CTRL CHG No.	00 ~ 78 : CONTROL CHANGE 0~120		01,25,09
20	DISPLAY MODE	00 ~ 03 : NAME, NUM, TIME, MAP		01,29,00
21	BYPASS PEDAL	00 ~ 04 : L, H, U, D, U/D		01,2A,00
22	TRIGGER PEDAL	00 ~ 04 : L, H, U, D, U/D		01,2A,01
23	HOLD PEDAL	00 ~ 04 : L, H, U, D, U/D		01,2A,02
24	DIRECT OFFSET	00 ~ 5B : -INF, -60 ~ 0dB		01,2C,00

25	DELAY OFFSET	00 ~ 5B	:-INF, -60 ~ 0dB	01, 2C, 01
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TABLE 3 MAP PARAMETERS

BYTE No.	PARAMETERS	DATA (HEX)	VALUE	PARAM. No.
00 : 127	MAP NUMBER 00 MAP NUMBER 127	00 .. FF	0 .. 255	01, 27, 00 01, 27, 7F

*1 Bit Offset Number



*2 The time mode and the tempo mode can be changed by the control change which set as the MIDI ms/ @ parameter in utility mode.

*3 The value is changed depend on the parameter which set as the expression target data.

- *4 00 : WARP!
- 01 : PEDAL
- 04~7C : CONTROL CHANGE 0~120
- 7D : AFTER TOUCH
- 7E : PITCH BEND
- 7F : VELOCITY
- 80 : NOTE NUMBER