KORG RK-100S MIDI Implementation Revision 1.00
(2014.05.23)

1.TRANSMITTED DATA

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

Status (Transmitted by ...) [Hex]	Second [H] [D]	Third [H] [D]	Description	ENA
8n	kk (kk)	40 (64)	Note Off	*1 A
9n	kk (kk)	vv (vv)	Note On vv=1~127	*1 A
Bn	00 (00)	mm (mm)	Bank Select(MSB) (Program Change)	*2 P
Bn	06 (06)	vv (vv)	Data Entry (MSB) (Panel Control)	*3 C
Bn	20 (32)	bb (bb)	Bank Select(LSB) (Program Change)	*2 P
Bn	62 (98)	vv (vv)	NRPN (LSB) (Panel Control)	*3 C
Bn	63 (99)	vv (vv)	NRPN (MSB) (Panel Control)	*3 C
Bn	cc (cc)	vv (vv)	Control Change cc=00~95,102~119 (Panel Control)	*4 C
Cn	pp (pp)	-- --	Program Change (Program Change)	*2 P
En	pb (pb)	PB (PB)	Pitch Bender Change (Short/Long Ribbon)	B

n : MIDI Channel = 0 ~ F
vv : Value

pb : 0LLLLLLL
PB : 0MMMMMMM
Value : MMMMMM MLLLLLLL

ENA = A : Always Enable
C : Enabled when Global Control Change is enabled.
P : Enabled when Global Program Change is enabled.
B : Enabled when Global PitchBend is enabled.

*1 : kk = 0 ~ 127 (37Keys + OCT + Transpose , Position = Post KBD)

*2 : Program MIDI Out [Hex] [Dec]
Program 001 - 128 mm,bb,pp = 00,00,00~7F / 00,00,000~127
Program 129 - 200 = 00,01,00~47 / 00,01,000~071

*3 : Non Registered Parameter Number (NRPN)

MSB [H]	LSB [H]	Parameter	Data Entry(MSB) Value
00	02	Arpeggio On/Off	00/7F:OFF/ON
00	03	Arpeggio Octaves	00~03:1~4 Oct.
00	04	Arpeggio Latch On/Off	00~3F/40~7F:OFF/ON
00	07	Arpeggio Type	*3-1
00	0A	Arpeggio Gate	*3-2
00	0B	Arpeggio Select	*3-3
04	00	Virtual Patch 1 Source	*3-4
04	01	Virtual Patch 2 Source	*3-4
04	02	Virtual Patch 3 Source	*3-4
04	03	Virtual Patch 4 Source	*3-4
04	04	Virtual Patch 5 Source	*3-4
04	08	Virtual Patch 1 Destination	*3-5
04	09	Virtual Patch 2 Destination	*3-5
04	0A	Virtual Patch 3 Destination	*3-5
04	0B	Virtual Patch 4 Destination	*3-5
04	0C	Virtual Patch 5 Destination	*3-5
04	40	Vocoder Band01 Level	00~7F:0~127
04	41	Vocoder Band02 Level	00~7F:0~127
04	42	Vocoder Band03 Level	00~7F:0~127
04	43	Vocoder Band04 Level	00~7F:0~127
04	44	Vocoder Band05 Level	00~7F:0~127
04	45	Vocoder Band06 Level	00~7F:0~127
04	46	Vocoder Band07 Level	00~7F:0~127
04	47	Vocoder Band08 Level	00~7F:0~127
04	48	Vocoder Band09 Level	00~7F:0~127
04	49	Vocoder Band10 Level	00~7F:0~127
04	4A	Vocoder Band11 Level	00~7F:0~127
04	4B	Vocoder Band12 Level	00~7F:0~127
04	4C	Vocoder Band13 Level	00~7F:0~127
04	4D	Vocoder Band14 Level	00~7F:0~127
04	4E	Vocoder Band15 Level	00~7F:0~127
04	4F	Vocoder Band16 Level	00~7F:0~127

04	50	Vocoder Band01 Panpot	*3-6
04	51	Vocoder Band02 Panpot	*3-6
04	52	Vocoder Band03 Panpot	*3-6
04	53	Vocoder Band04 Panpot	*3-6
04	54	Vocoder Band05 Panpot	*3-6
04	55	Vocoder Band06 Panpot	*3-6
04	56	Vocoder Band07 Panpot	*3-6
04	57	Vocoder Band08 Panpot	*3-6
04	58	Vocoder Band09 Panpot	*3-6
04	59	Vocoder Band10 Panpot	*3-6
04	5A	Vocoder Band11 Panpot	*3-6
04	5B	Vocoder Band12 Panpot	*3-6
04	5C	Vocoder Band13 Panpot	*3-6
04	5D	Vocoder Band14 Panpot	*3-6
04	5E	Vocoder Band15 Panpot	*3-6
04	5F	Vocoder Band16 Panpot	*3-6
04	60	Vocoder Fc Mod.Source	*3-7
05	00	Voice Mode	*3-8
05	04	Vocoder SW	00/7F:OFF/ON

```
*3-1 : 00~14 : Up
       15~29 : Down
       2A~3E : Alt1
       3F~53 : Alt2
       54~68 : Random
       69~7F : Trigger

*3-2 : 00~07 :   0,   1,   1,   2,   3,   4,   5,   5,
       08~0F :   6,   7,   8,   9,   9,  10,  11,  12,
       10~17 :  13,  13,  14,  15,  16,  16,  17,  18,
       18~1F :  19,  20,  20,  21,  22,  23,  24,  24,
       20~27 :  25,  26,  27,  28,  28,  29,  30,  31,
       28~2F :  31,  32,  33,  34,  35,  35,  36,  37,
       30~37 :  38,  39,  39,  40,  41,  42,  43,  43,
       38~3F :  44,  45,  46,  46,  47,  48,  49,  50,
       40~47 :  50,  51,  52,  53,  54,  54,  55,  56,
       48~4F :  57,  57,  58,  59,  60,  61,  61,  62,
       50~57 :  63,  64,  65,  65,  66,  67,  68,  69,
       58~5F :  69,  70,  71,  72,  72,  73,  74,  75,
       60~67 :  76,  76,  77,  78,  79,  80,  80,  81,
       68~6F :  82,  83,  84,  84,  85,  86,  87,  87,
       70~77 :  88,  89,  90,  91,  91,  92,  93,  94,
       78~7F :  95,  95,  96,  97,  98,  99,  99, 100,

*3-3 : 00~2A : Timbre 1
       2B~55 : Timbre 2
       56~7F : Timbre 1+2
```

```
*3-4 : 00~09 : Filter EG
       0A~13 : Amp EG
       14~1D : Assignable EG
       1E~28 : LFO1
       29~30 : LFO2
       31~3A : Velocity
       3B~44 : Short Ribbon (Pitch)
       45~4E : Short Ribbon (Mod)
       4F~58 : KBD Track
       59~61 : MIDI1
       62~6B : MIDI2
       6C~75 : MIDI3
       76~7F : Long Ribbon (Filter)

*3-5 : 00~02 :Pitch
       03~05 :OSC2 Tune
       06~09 :OSC1 Control1
       0A~0C :OSC1 Level
       0D~0F :OSC2 Level
       10~12 :Noise Level
       13~15 :Filter1 Balance
       16~19 :Filter1 Cutoff
       1A~1C :Filter1 Resonance
       1D~1F :Filter2 Cutoff
       20~22 :Drive/WS Depth
       23~25 :AMP Level
       26~29 :Panpot
       2A~2C :LFO1 Frequency
       2D~2F :LFO2 Frequency
       30~32 :Portamento
       33~35 :OSC1 Control2
       36~39 :Filter1 Filter EG Int.
       3A~3C :Filter1 KBD Track
       3D~3F :Filter2 RESONANCE
       40~42 :Filter2 Filter EG Int.
       43~45 :Filter2 KBD Track
       46~49 :Filter EG Attack
       4A~4C :Filter EG Decay
       4D~4F :Filter EG Sustain
       50~52 :Filter EG Release
       53~55 :Amp EG Attack
       56~59 :Amp EG Decay
       5A~5C :Amp EG Sustain
       5D~5F :Amp EG Release
       60~62 :Assignable EG Attack
       63~65 :Assignable EG Decay
       66~69 :Assignable EG Sustain
       6A~6C :Assignable EG Release
       6D~6F :Virtual Patch 1 Int.
```

```
        70~72 :Virtual Patch 2 Int.
        73~75 :Virtual Patch 3 Int.
        76~79 :Virtual Patch 4 Int.
        7A~7C :Virtual Patch 5 Int.
        7D~7F :Long Ribbon (Filter) Int.

 *3-6 : 00,01~40~7F = L63,L63~CNT~R63
        00~07 : L63, L63, L62, L61, L60, L59, L58, L57
        08~0F : L56, L55, L54, L53, L52, L51, L50, L49
        10~17 : L48, L47, L46, L45, L44, L43, L42, L41
        18~1F : L40, L39, L38, L37, L36, L35, L34, L33
        20~27 : L32, L31, L30, L29, L28, L27, L26, L25
        28~2F : L24, L23, L22, L21, L20, L19, L18, L17
        30~37 : L16, L15, L14, L13, L12, L11, L10, L09
        38~3F : L08, L07, L06, L05, L04, L03, L02, L01
        40~47 : CNT, R01, R02, R03, R04, R05, R06, R07
        48~4F : R08, R09, R10, R11, R12, R13, R14, R15
        50~57 : R16, R17, R18, R19, R20, R21, R22, R23
        58~5F : R24, R25, R26, R27, R28, R29, R30, R31
        60~67 : R32, R33, R34, R35, R36, R37, R38, R39
        68~6F : R40, R41, R42, R43, R44, R45, R46, R47
        70~77 : R48, R49, R50, R51, R52, R53, R54, R55
        78~7F : R56, R57, R58, R59, R60, R61, R62, R63

 *3-7 : 00~0A : Filter EG
        0B~14 : Amp EG
        15~1F : Assignable EG
        20~2A : LFO1
        2B~34 : LFO2
        35~3F : Velocity
        40~4A : Short Ribbon (Pitch)
        4B~54 : Short Ribbon (Mod)
        55~5F : KBD Track
        60~6A : MIDI1
        6B~74 : MIDI2
        75~7F : MIDI3

 *3-8 : 00~1F : Single
        20~3F : Layer
        40~5F : Split
        60~7F : Multi


 *4 :Control Change (assignable)
+-----------------------+-----------------------------------+
|    Synth              | Value  Synth                      |
+-----------------------+-----------------------------------+
| Portamento            | 00~7F:0~127                       |
| Unison SW             | *4-1                              |
| OSC1 Wave             | *4-2                              |
```

OSC1 Mod.	*4-3
OSC1 Control1	*4-4
OSC1 Control2	*4-5
OSC2 Wave	*4-6
OSC2 Mod.	*4-7
OSC2 Semitone	*4-8
OSC2 Tune	*4-9
OSC1 Level	00~7F:0~127
OSC2 Level	00~7F:0~127
Noise Level	00~7F:0~127
Filter Routing	*4-10
Filter1 Type Balance	*4-11
Filter1 Cutoff	00~7F:0~127
Filter1 Resonance	00~7F:0~127
Filter1 Filter EG Int.	*4-9
Filter1 KBD Track	*4-12
Filter2 Type	*4-13
Filter2 Cutoff	00~7F:0~127
Filter2 Resonance	00~7F:0~127
Filter2 Filter EG Int.	*4-9
Filter2 KBD Track	*4-9
Amp Level	00~7F:0~127
Panpot	*3-6
Drive/WS Depth	00~7F:0~127
Filter EG Attack	00~7F:0~127
Filter EG Decay	00~7F:0~127
Filter EG Sustain	00~7F:0~127
Filter EG Release	00~7F:0~127
Amp EG Attack	00~7F:0~127
Amp EG Decay	00~7F:0~127
Amp EG Sustain	00~7F:0~127
Amp EG Release	00~7F:0~127
LFO1 Wave	*4-14
LFO1 Frequency	*4-15
LFO2 Wave	*4-16
LFO2 Frequency	*4-15
Virtual Patch 1 Int.	*4-9
Virtual Patch 2 Int.	*4-9
Virtual Patch 3 Int.	*4-9
Virtual Patch 4 Int.	*4-9
Virtual Patch 5 Int.	*4-9
LongRibbon(Filter)	00~7F:0~127
LongRibbon(Filter)Int.	*4-9
EQ Hi.Gain	*4-17
EQ Low.Gain	*4-17
Fx1 Dry/Wet	Refer EFFECT PARAMETER STRUCTURE
Fx1 LongRibbon(Filter)	Refer EFFECT PARAMETER STRUCTURE
Fx2 Dry/Wet	Refer EFFECT PARAMETER STRUCTURE
Fx2 LongRibbon(Filter)	Refer EFFECT PARAMETER STRUCTURE

Vocoder	Value Vocoder
Threshold	00~7F:0~127
HPF Level	00~7F:0~127
HPF Gate	*4-18
Direct Level	00~7F:0~127
Timbre1 Level	00~7F:0~127
Timbre2 Level	00~7F:0~127
Vocoder Level	00~7F:0~127
Formant Shift	*4-19
FC Offset	*4-9
Resonance	00~7F:0~127
FC Mod.Int.	*4-9
E.F.Sens	00~7F:0~127

```
 *4-1 : 00~1F : Unison Off
        20~3F : 2Voice Unison
        40~5F : 3Voice Unison
        60~7F : 4Voice Unison

 *4-2 : 00~0F : Saw
        10~1F : Pulse
        20~2F : Tri
        30~3F : Sin
        40~4F : Formant
        50~5F : Noise
        60~6F : PCM/DWGS
        70~7F : Audio In

 *4-3 : 00~1F : Waveform
        20~3F : Cross
        40~5F : Unison
        60~7F : VPM

 *4-4 : When OSC1Wave is "Saw,Pulse,Tri,Sin"  and OSC1Mod.Type is
Waveform      00~7F : Waveform
        When OSC1Wave is "Saw,Pulse,Tri,Sin"  and OSC1Mod.Type is
Cross         00~7F : Mod.Depth
        When OSC1Wave is "Saw,Pulse,Tri,Sin"  and OSC1Mod.Type is
Unison        00~7F : Detune
        When OSC1Wave is "Saw,Pulse,Tri,Sin"  and OSC1Mod.Type is VPM
00~7F : Mod.Depth

        When OSC1Wave is "FORMANT"            00~7F : Formant Width
(Formant)
        When OSC1Wave is "NOISE"              00~7F : Resonance
        When OSC1Wave is "PCM/DWGS"           none
        When OSC1Wave is "Audio In"           00~7F : Gain
```

```
 *4-5 : When OSC1Wave is "Saw,Tri,Sin"        and OSC1Mod.Type is
Waveform      00~7F : WFM LFO1 Mod. Int.
        When OSC1Wave is "Pulse"              and OSC1Mod.Type is
Waveform      00~7F : PWM LFO1 Mod. Int.
        When OSC1Wave is "Saw,Pulse,Tri,Sin"  and OSC1Mod.Type is
Cross         00~7F : Mod. Depth LFO1 Mod. Int.
        When OSC1Wave is "Saw,Pulse,Tri,Sin"  and OSC1Mod.Type is
Unison        00~7F : Unison Phase
        When OSC1Wave is "Saw,Pulse,Tri,Sin"  and OSC1Mod.Type is VPM
00~7F : Carrier Harmonics

        When OSC1Wave is "FORMANT"            00~7F : Formant Shift
(Offset)
        When OSC1Wave is "NOISE"              00~7F : LPF/HPF Balance
        When OSC1Wave is "PCM/DWGS"           00~7F : Wave Select
        When OSC1Wave is "Audio In"           none

 *4-6 : 00~1F : Saw
        20~3F : Pulse
        40~5F : Tri
        60~7F : Sin

 *4-7 : 00~1F : Off
        20~3F : Ring
        40~5F : Sync
        60~7F : Ring+Sync

 *4-8 : 00~07 : -24,-24,-24,-23,-23,-23,-22,-22
        08~0F : -21,-21,-21,-20,-20,-20,-19,-19
        10~17 : -18,-18,-18,-17,-17,-16,-16,-16
        18~1F : -15,-15,-15,-14,-14,-13,-13,-13
        20~27 : -12,-12,-11,-11,-11,-10,-10,-10
        28~2F : - 9,- 9,- 8,- 8,- 8,- 7,- 7,- 7
        30~37 : - 6,- 6,- 5,- 5,- 5,- 4,- 4,- 3
        38~3F : - 3,- 3,- 2,- 2,- 2,- 1,- 1,  0
        40~47 :   0,  0,+ 1,+ 1,+ 2,+ 2,+ 2,+ 3
        48~4F : + 3,+ 3,+ 4,+ 4,+ 5,+ 5,+ 5,+ 6
        50~57 : + 6,+ 7,+ 7,+ 7,+ 8,+ 8,+ 8,+ 9
        58~5F : + 9,+10,+10,+10,+11,+11,+11,+12
        60~67 : +12,+13,+13,+13,+14,+14,+15,+15
        68~6F : +15,+16,+16,+16,+17,+17,+18,+18
        70~77 : +18,+19,+19,+20,+20,+20,+21,+21
        78~7F : +21,+22,+22,+23,+23,+23,+24,+24

 *4-9 : 00,01~7F = -63,-63~+63
        00~07 : -63,-63,-62,-61,-60,-59,-58,-57
        08~0F : -56,-55,-54,-53,-52,-51,-50,-49
        10~17 : -48,-47,-46,-45,-44,-43,-42,-41
        18~1F : -40,-39,-38,-37,-36,-35,-34,-33
        20~27 : -32,-31,-30,-29,-28,-27,-26,-25
```

```
       28~2F : -24,-23,-22,-21,-20,-19,-18,-17
       30~37 : -16,-15,-14,-13,-12,-11,-10,- 9
       38~3F : - 8,- 7,- 6,- 5,- 4,- 3,- 2,- 1
       40~47 :   0,+ 1,+ 2,+ 3,+ 4,+ 5,+ 6,+ 7
       48~4F : + 8,+ 9,+10,+11,+12,+13,+14,+15
       50~57 : +16,+17,+18,+19,+20,+21,+22,+23
       58~5F : +24,+25,+26,+27,+28,+29,+30,+31
       60~67 : +32,+33,+34,+35,+36,+37,+38,+39
       68~6F : +40,+41,+42,+43,+44,+45,+46,+47
       70~77 : +48,+49,+50,+51,+52,+53,+54,+55
       78~7F : +56,+57,+58,+59,+60,+61,+62,+63

*4-10: 00~1F : Single
       20~3F : Serial
       40~5F : Parallel
       60~7F : Individual

*4-11: 00    : LPF24
       01~1E : LPF24 ~ LPF12
       1F~21 : LPF12
       22~3E : LPF12 ~ HPF
       3F~41 : HPF
       42~5E : HPF ~ BPF
       5F~61 : BPF
       62~7E : BPF ~ Thru
       7F    : Thru

*4-12: 00,01~40~7F = -2.00~0.00~+2.00
       00~07 : -2.00,-2.00,-1.93,-1.86,-1.80,-1.73,-1.66,-1.60,
       08~0F : -1.53,-1.46,-1.40,-1.33,-1.26,-1.20,-1.13,-1.06,
       10~17 : -1.00,-0.97,-0.95,-0.93,-0.91,-0.89,-0.87,-0.85,
       18~1F : -0.83,-0.81,-0.79,-0.77,-0.75,-0.72,-0.70,-0.68,
       20~27 : -0.66,-0.64,-0.62,-0.60,-0.58,-0.56,-0.54,-0.52,
       28~2F : -0.50,-0.47,-0.45,-0.43,-0.41,-0.39,-0.37,-0.35,
       30~37 : -0.33,-0.31,-0.29,-0.27,-0.25,-0.22,-0.20,-0.18,
       38~3F : -0.16,-0.14,-0.12,-0.10,-0.08,-0.06,-0.04,-0.02,
       40~47 :  0.00, 0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14,
       48~4F :  0.16, 0.18, 0.20, 0.22, 0.25, 0.27, 0.29, 0.31,
       50~57 :  0.33, 0.35, 0.37, 0.39, 0.41, 0.43, 0.45, 0.47,
       58~5F :  0.50, 0.52, 0.54, 0.56, 0.58, 0.60, 0.62, 0.64,
       60~67 :  0.66, 0.68, 0.70, 0.72, 0.75, 0.77, 0.79, 0.81,
       68~6F :  0.83, 0.85, 0.87, 0.89, 0.91, 0.93, 0.95, 0.97,
       70~77 :  1.00, 1.06, 1.13, 1.20, 1.26, 1.33, 1.40, 1.46,
       78~7F :  1.53, 1.60, 1.66, 1.73, 1.80, 1.86, 1.93, 2.00

*4-13: 00~2A : LPF
       2B~54 : HPF
       55~7F : BPF

*4-14: 00~19 : Saw
```

```
        1A~32 : Square
        33~4C : Triangle
        4D~65 : S&H
        66~7F : Random

 *4-15: When BPM Sync is "OFF".
        00~07 : 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08,
        08~0F : 0.09, 0.10, 0.11, 0.12, 0.13, 0.14, 0.15, 0.16,
        10~17 : 0.17, 0.18, 0.19, 0.20, 0.21, 0.22, 0.23, 0.24,
        18~1F : 0.25, 0.29, 0.33, 0.42, 0.50, 0.58, 0.67, 0.75,
        20~27 : 0.83, 0.92, 1.00, 1.13, 1.25, 1.38, 1.50, 1.63,
        28~2F : 1.75, 1.88, 2.00, 2.13, 2.25, 2.38, 2.50, 2.63,
        30~37 : 2.75, 2.88, 3.00, 3.13, 3.25, 3.38, 3.50, 3.63,
        38~3F : 3.75, 3.88, 4.00, 4.13, 4.25, 4.38, 4.50, 4.63,
        40~47 : 4.75, 4.88, 5.00, 5.25, 5.50, 5.75, 6.00, 6.25,
        48~4F : 6.50, 6.75, 7.00, 7.25, 7.50, 7.75, 8.00, 8.25,
        50~57 : 8.50, 8.75, 9.00, 9.25, 9.50, 9.75, 10.0, 10.5,
        58~5F : 11.0, 11.5, 12.0, 12.5, 13.0, 13.5, 14.0, 14.5,
        60~67 : 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.5, 23.0,
        68~6F : 24.5, 26.0, 27.5, 29.0, 31.0, 33.0, 35.0, 37.0,
        70~77 : 39.0, 41.0, 44.0, 47.0, 50.0, 53.0, 57.0, 61.0,
        78~7F : 65.0, 70.0, 75.0, 80.0, 85.0, 90.0, 95.0, 100.0

        When BPM Sync is "ON".
        00~07 : 8/1     26~2C : 1/2     4B~52 : 1/6     71~77 : 1/32
        08~0E : 4/1     2D~34 : 3/8     53~59 : 1/8     78~7F : 1/64
        0F~16 : 2/1     35~3B : 1/3     5A~61 : 1/12
        17~1D : 1/1     3C~43 : 1/4     62~68 : 1/16
        1E~25 : 3/4     44~4A : 3/16    69~70 : 1/24

 *4-16: 00~19 : Saw
        1A~32 : Square+
        33~4C : Sine
        4D~65 : S&H
        66~7F : Random

 *4-17: 00~07 : -15.0, -15.0, -15.0, -14.5, -14.5, -14.0, -14.0,
-13.5,
        08~0F : -13.5, -13.0, -13.0, -12.5, -12.5, -12.0, -12.0,
-11.5,
        10~17 : -11.5, -11.0, -11.0, -10.5, -10.5, -10.0, -10.0,
-10.0,
        18~1F : -09.5, -09.5, -09.0, -09.0, -08.5, -08.5, -08.0,
-08.0,
        20~27 : -07.5, -07.5, -07.0, -07.0, -06.5, -06.5, -06.0,
-06.0,
        28~2F : -05.5, -05.5, -05.0, -05.0, -05.0, -04.5, -04.5,
-04.0,
        30~37 : -04.0, -03.5, -03.5, -03.0, -03.0, -02.5, -02.5,
-02.0,
```

```
        38~3F : -02.0, -01.5, -01.5, -01.0, -01.0, -00.5, -00.5,
+00.0,
        40~47 : +00.0, +00.0, +00.5, +00.5, +01.0, +01.0, +01.5,
+01.5,
        48~4F : +02.0, +02.0, +02.5, +02.5, +03.0, +03.0, +03.5,
+03.5,
        50~57 : +04.0, +04.0, +04.5, +04.5, +05.0, +05.0, +05.0,
+05.5,
        58~5F : +05.5, +06.0, +06.0, +06.5, +06.5, +07.0, +07.0,
+07.5,
        60~67 : +07.5, +08.0, +08.0, +08.5, +08.5, +09.0, +09.0,
+09.5,
        68~6F : +09.5, +10.0, +10.0, +10.0, +10.5, +10.5, +11.0,
+11.0,
        70~77 : +11.5, +11.5, +12.0, +12.0, +12.5, +12.5, +13.0,
+13.0,
        78~7F : +13.5, +13.5, +14.0, +14.0, +14.5, +14.5, +15.0, +15.0

 *4-18: 00~3F : Disable
        40~7F : Enable

 *4-19: 00~1A : -2
        1B~34 : -1
        35~4C :  0
        4D~65 : +1
        66~7F : +2
```

1-2 SYSTEM REALTIME MESSAGES

Status[H]	Description	
F8	Timing Clock	*5
FE	Active Sensing	

*5 :This message is transmitted when the "Clock" is set to "Internal".

1-3 UNIVERSAL SYSTEM EXCLUSIVE MESSAGES

DEVICE INQUIRY REPLY

Byte[H]	Description
F0	Exclusive Status
7E	Non Realtime Message
0g	MIDI Global Channel (Device ID)
06	General Information

```
|   02    | Identity Reply                                |
|   42    | KORG ID              ( Manufacturers ID )     |
|   22    | RK-100S              ( Family ID   (LSB))     |
|   01    |                      ( Family ID   (MSB))     |
|   01    |                      ( Member ID   (LSB))     |
|   00    |                      ( Member ID   (MSB))     |
|   xx    |                      ( Minor Ver.  (LSB))     |
|   xx    |                      ( Minor Ver.  (MSB))     |
|   xx    |                      ( Major Ver.  (LSB))     |
|   xx    |                      ( Major Ver.  (MSB))     |
|   F7    | END OF EXCLUSIVE                              |
+---------+-----------------------------------------------+
```

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

1-4 SEARCH DEVICE REPLY

```
+---------+-----------------------------------------------+
| Byte[H] |                Description                    |
+---------+-----------------------------------------------+
|   F0    | Exclusive Status                              |
|   42    | KORG ID              ( Manufacturers ID )     |
|   50    | Search Device                                 |
|   01    | Reply                                         |
|   0g    | MIDI Global Channel  ( Device ID )            |
|   dd    | Echo Back ID                                  |
|   22    | RK-100S              ( Family ID   (LSB))     |
|   01    |                      ( Family ID   (MSB))     |
|   01    |                      ( Member ID   (LSB))     |
|   00    |                      ( Member ID   (MSB))     |
|   xx    |                      ( Minor Ver.  (LSB))     |
|   xx    |                      ( Minor Ver.  (MSB))     |
|   xx    |                      ( Major Ver.  (LSB))     |
|   xx    |                      ( Major Ver.  (MSB))     |
|   F7    | END OF EXCLUSIVE                              |
+---------+-----------------------------------------------+
```

g : MIDI Channel = 0 ~ F :Global Channel
dd : Echo Back ID = copy from SEARCH DEVICE REQUEST message.

This message is transmitted whenever a SEARCH DEVICE REQUEST is received.

2.RECOGNIZED RECEIVE DATA

2-1 CHANNEL MESSAGES

```
+--------+---------+---------+-------------------------------------+
| Status | Second  |  Third  |           Description               |
```

[Hex]	[H] [D]	[H] [D]		
8n	kk (kk)	vv (vv)	Note Off vv=0~127	
9n	kk (kk)	00 (00)	Note Off	
9n	kk (kk)	vv (vv)	Note On vv=1~127	
Bn	00 (00)	mm (mm)	Bank Select(MSB) (Program/Timbre)	*7
Bn	01 (01)	vv (vv)	Pitch Modulation Depth	
Bn	06 (06)	vv (vv)	Data Entry(MSB)	*8
Bn	0B (11)	vv (vv)	Expression	
Bn	20 (32)	bb (bb)	Bank Select(LSB) (Program/Timbre)	*7
Bn	40 (64)	vv (vv)	Sustain Off/On	
Bn	41 (65)	vv (vv)	Portamento Off/On	
Bn	62 (98)	nl (nl)	NRPN LSB	*8
Bn	63 (99)	nm (nm)	NRPN MSB	*8
Bn	78(120)	00 (0)	All Sound Off	
Bn	79(121)	00 (0)	Reset All Controllers	
Bn	7B(123)	00 (0)	All Note Off	
Bn	7C(124)	00 (0)	Omni Mode Off	
Bn	7D(125)	00 (0)	Omni Mode On	
Bn	cc (cc)	vv (vv)	Control Data cc=00~95,102~119	
Cn	pp (pp)	-- --	Program Change	*7
Dn	vv (vv)	-- --	Channel Pressure (After Touch)	
En	pb (pb)	PB (PB)	Pitch Bender Change	

n : MIDI Channel = 0 ~ F
vv : Value

pb : 0LLLLLLL
PB : 0MMMMMMM
Value : MMMMMM MLLLLLLL

*7 : Program MIDI Out [Hex] [Dec]
Program 001 - 128 mm,bb,pp = 00,00,00~7F / 00,00,000~127
Program 129 - 200 = 00,01,00~47 / 00,01,000~071

Timbre1 001 - 128 20,20,00~7F / 32,32,000~127 (only Receive)
Timbre1 129 - 200 20,21,00~7F / 32,33,000~127 (only Receive)
Timbre2 001 - 128 20,22,00~7F / 32,34,000~127 (only Receive)
Timbre2 129 - 200 20,23,00~7F / 32,35,000~127 (only Receive)

*8 : Non Registered Parameter Number (NRPN)

MSB [H]	LSB [H]	Parameter	Data Entry(MSB) Value
00	02	Arpeggio On/Off	00~3F/40~7F:OFF/ON
00	03	Arpeggio Octaves	00~03:1~4 Oct.
00	04	Arpeggio Latch On/Off	00~3F/40~7F:OFF/ON
00	07	Arpeggio Type	*3-1
00	0A	Arpeggio Gate	*3-2
00	0B	Arpeggio Select SW	*3-3
04	00	Virtual Patch 1 Source	*3-4
04	01	Virtual Patch 2 Source	*3-4
04	02	Virtual Patch 3 Source	*3-4
04	03	Virtual Patch 4 Source	*3-4
04	04	Virtual Patch 5 Source	*3-4
04	08	Virtual Patch 1 Destination	*3-5
04	09	Virtual Patch 2 Destination	*3-5
04	0A	Virtual Patch 3 Destination	*3-5
04	0B	Virtual Patch 4 Destination	*3-5
04	0C	Virtual Patch 5 Destination	*3-5
04	40	Vocoder Band01 Level	00~7F:0~127
04	41	Vocoder Band02 Level	00~7F:0~127
04	42	Vocoder Band03 Level	00~7F:0~127
04	43	Vocoder Band04 Level	00~7F:0~127
04	44	Vocoder Band05 Level	00~7F:0~127
04	45	Vocoder Band06 Level	00~7F:0~127
04	46	Vocoder Band07 Level	00~7F:0~127
04	47	Vocoder Band08 Level	00~7F:0~127
04	48	Vocoder Band09 Level	00~7F:0~127
04	49	Vocoder Band10 Level	00~7F:0~127
04	4A	Vocoder Band11 Level	00~7F:0~127
04	4B	Vocoder Band12 Level	00~7F:0~127
04	4C	Vocoder Band13 Level	00~7F:0~127
04	4D	Vocoder Band14 Level	00~7F:0~127
04	4E	Vocoder Band15 Level	00~7F:0~127
04	4F	Vocoder Band16 Level	00~7F:0~127
04	50	Vocoder Band01 Panpot	*4-9
04	51	Vocoder Band02 Panpot	*4-9
04	52	Vocoder Band03 Panpot	*4-9
04	53	Vocoder Band04 Panpot	*4-9
04	54	Vocoder Band05 Panpot	*4-9
04	55	Vocoder Band06 Panpot	*4-9
04	56	Vocoder Band07 Panpot	*4-9
04	57	Vocoder Band08 Panpot	*4-9
04	58	Vocoder Band09 Panpot	*4-9
04	59	Vocoder Band10 Panpot	*4-9
04	5A	Vocoder Band11 Panpot	*4-9
04	5B	Vocoder Band12 Panpot	*4-9

04	5C	Vocoder Band13 Panpot	*4-9
04	5D	Vocoder Band14 Panpot	*4-9
04	5E	Vocoder Band15 Panpot	*4-9
04	5F	Vocoder Band16 Panpot	*4-9
04	60	Vocoder Fc Mod.Source	*3-7
05	00	Voice Mode	*3-8
05	04	Vocoder SW	00~3F/40~7F:OFF/ON

All these parameters can be changed by "Data Entry(MSB)".

2-2 SYSTEM REALTIME MESSAGES

Status[H]	Description	
F8	Timing Clock	*9
FA	Start	*9
FC	Stop (Arpeggiator stop)	*9
FE	Active Sensing	

*9 :This message is recognized when the "Clock" is set to "Auto".

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	General Information
01	Identity Request
F7	END OF EXCLUSIVE

nn : MIDI Channel = 0 ~ F :Global Channel
= 7F :Any Channel

2-4 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (REALTIME)

(1) MASTER VOLUME

Byte[H]	Description

F0	Exclusive Status
7F	Realtime Message
nn	MIDI Channel (Device ID)
04	Device Control
01	Master Volume
vv	Value (LSB)
mm	Value (MSB)
F7	END OF EXCLUSIVE

```
nn : MIDI Channel = 0~F : Global Channel
                  = 7F  : Any Channel
mm,vv : 00,00~7F,7F     : Min~Max
```

(2) MASTER FINE TUNE

Byte[H]	Description
F0	Exclusive Status
7F	Realtime Message
nn	MIDI Channel (Device ID)
04	Device Control
03	Master Fine Tune
vv	Value (LSB)
mm	Value (MSB)
F7	END OF EXCLUSIVE

```
nn : MIDI Channel = 0~F   : Global Channel
                  = 7F    : Any Channel
mm,vv : 00,00~40,00~7F,7F : -100~0~+100
```

2-5 SEARCH DEVICE REQUEST

Byte[H]	Description
F0	Exclusive Status
42	KORG ID (Manufacturers ID)
50	Search Device
00	Request
dd	Echo Back ID
F7	END OF EXCLUSIVE

Receive this message, and transmits SEARCH DEVICE REPLY message including copied Echo Back ID.

3. KORG System Exclusive Message Received Function Code List (7th byte of Exclusive message)

Function ID [Hex]	Description/Function	*6
10	CURRENT PROGRAM DATA DUMP REQUEST	
1C	PROGRAM DATA DUMP REQUEST (1 PROG)	
0E	GLOBAL DATA DUMP REQUEST	
11	PROGRAM WRITE REQUEST	
40	CURRENT PROGRAM DATA DUMP	R,D
4C	PROGRAM DATA DUMP (1 PROG)	R
51	GLOBAL DATA DUMP	R,D
41	PARAMETER CHANGE	C
26	DATA FORMAT ERROR	
23	DATA LOAD COMPLETED	
24	DATA LOAD ERROR	
21	WRITE COMPLETED	
22	WRITE ERROR	

*6 : Transmitted when
R : Request message is received.
D : Data dump from MIDI dump page.
C : Parameter is changed by Switch or Ribbon Slider.

(R:Receive, T:Transmit)

(1) CURRENT PROGRAM DATA DUMP REQUEST R

Byte	Description
F0,42,3g, 00,01,22	EXCLUSIVE HEADER
0001 0000 (10)	CURRENT PROGRAM DATA DUMP REQUEST 10H
1111 0111 (F7)	EOX

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

(2) PROGRAM DATA DUMP REQUEST (1 PROG) R

Byte	Description

```
+----------------+-------------------------------------------------+
| F0,42,3g,      | EXCLUSIVE HEADER                                |
|    00,01,22    |                                                 |
| 0001 1100 (1C) | PROGRAM DATA DUMP REQUEST              1CH      |
| 0ppp pppp (pp) | Source Program No.(LSB bit  6~0)                |
| 0000 0000 (00) |                                                 |
| 1111 0111 (F7) | EOX                                             |
+----------------+-------------------------------------------------+
```

Receive this message, and transmits Func=4C or Func=24 message.

(3) GLOBAL DATA DUMP REQUEST R

```
+----------------+-------------------------------------------------+
|     Byte       |             Description                         |
+----------------+-------------------------------------------------+
| F0,42,3g,      | EXCLUSIVE HEADER                                |
|    00,01,22    |                                                 |
| 0000 1110 (0E) | GLOBAL DATA DUMP REQUEST               0EH      |
| 1111 0111 (F7) | EOX                                             |
+----------------+-------------------------------------------------+
```

Receive this message, and transmits Func=51 or Func=24 message.

(4) PROGRAM WRITE REQUEST R

```
+----------------+-------------------------------------------------+
|     Byte       |            Description                          |
+----------------+-------------------------------------------------+
| F0,42,3g,      | EXCLUSIVE HEADER                                |
|    00,01,22    |                                                 |
| 0001 0001 (11) | PROGRAM WRITE REQUEST                  11H      |
| 0ppp pppp (pp) | Destination Program No.(LSB bit  6~0)           |
| 0000 0000 (00) |                                                 |
| 1111 0111 (F7) | EOX                                             |
+----------------+-------------------------------------------------+
```

Receive this message, and transmits Func=21 or Func=22 message.

(5) CURRENT PROGRAM DATA DUMP R/T

```
+----------------+-------------------------------------------------+
|     Byte       |             Description                         |
+----------------+-------------------------------------------------+
| F0,42,3g,      | EXCLUSIVE HEADER                                |
|    00,01,22    |                                                 |
| 0100 0000 (40) | CURRENT PROGRAM DATA DUMP              40H      |
| 0ddd dddd (dd) | Data                                  (NOTE 1,3) |
|     :          |  :                                              |
| 1111 0111 (F7) | EOX                                             |
```

```
+----------------+-------------------------------------------------+
```

Receive this message & data, save them to Edit Buffer and transmits Func=23 or Func=24 message.
Receive Func=10 message, and transmits this message & data from Edit Buffer.

(6) PROGRAM DATA DUMP (1 PROG) R/T

Byte	Description	
F0,42,3g,	EXCLUSIVE HEADER	
00,01,22		
0100 1100 (4C)	PROGRAM DATA DUMP	4CH
0ppp pppp (pp)	Program No.(LBS bit 6~0)	
0000 0000 (00)		
0ddd dddd (dd)	Data	(NOTE 1,3)
:	:	
1111 0111 (F7)	EOX	

Receive this message & data, save them to Internal Memory and transmits Func=23 or Func=24 message.
Receive Func=1C message, and transmits this message & data from Internal Memory.
When DATA DUMP is executed, transmit this message & data from Internal Memory.

(7) GLOBAL DATA DUMP R/T

Byte	Description	
F0,42,3g,	EXCLUSIVE HEADER	
00,01,22		
0101 0001 (51)	GLOBAL DATA DUMP	51H
0ddd dddd (dd)	Data	(NOTE 2,3)
:	:	
1111 0111 (F7)	EOX	

Receive this message & data, save them to Internal Memory and transmits Func=23 or Func=24 message.
Receive Func=0E message, and transmits this message & data from Edit Buffer.
When DATA DUMP is executed, transmit this message & data from Edit Buffer.

(8) PARAMETER CHANGE R/T

Byte	Description	
F0,42,3g, 00,01,22	EXCLUSIVE HEADER	
0100 0001 (41)	PARAMETER CHANGE	41H
0ppp pppp (pp)	Parameter ID (LSB bit 6~0)	(NOTE 4)
0000 pppp (PP)	Parameter ID (MSB bit13~7)	(NOTE 4)
0qqq qqqq (qq)	Parameter Sub ID (LSB bit 6~0)	(NOTE 4)
0000 qqqq (QQ)	Parameter Sub ID (MSB bit13~7)	(NOTE 4)
0vvv vvvv (vv)	Value (LSB bit 6~0)	(NOTE 4)
0vvv vvvv (VV)	Value (MSB bit13~7)	(NOTE 4)
1111 0111 (F7)	EOX	

(Even if it receives this message, a reply does not return)
When the Parameter is changed by Switch & Ribbon Slider, transmit this message & data.

(9) RECEIVE DATA FORMAT ERROR T

Byte	Description	
F0,42,3g, 00,01,22	EXCLUSIVE HEADER	
0010 0110 (26)	DATA FORMAT ERROR	26H
1111 0111 (F7)	EOX	

When found an error in the received message (ex.data length), transmits this message.

(10) DATA LOAD COMPLETED (ACK) T

Byte	Description	
F0,42,3g, 00,01,22	EXCLUSIVE HEADER	
0010 0011 (23)	DATA LOAD COMPLETED	23H
1111 0111 (F7)	EOX	

When DATA LOAD,PROCESSING have been completed, transmits this message.

(11) DATA LOAD ERROR (NAK) T

Byte	Description	
F0,42,3g, 00,01,22	EXCLUSIVE HEADER	
0010 0100 (24)	DATA LOAD ERROR	24H
1111 0111 (F7)	EOX	

When DATA LOAD,PROCESSING have not been completed (ex.protect), transmits this message.

(12) WRITE COMPLETED T

Byte	Description	
F0,42,3g, 00,01,22	EXCLUSIVE HEADER	
0010 0001 (21)	WRITE COMPLETED	21H
1111 0111 (F7)	EOX	

When DATA WRITE MIDI has been completed, transmits this message.

(13) WRITE ERROR T

Byte	Description	
F0,42,3g, 00,01,22	EXCLUSIVE HEADER	
0010 0010 (22)	WRITE ERROR	22H
1111 0111 (F7)	EOX	

When DATA WRITE MIDI has not been completed, transmits this message.

NOTE 1: CURRENT PROGRAM DATA (IN CURRENT BUFFER) DUMP FORMAT
& PROGRAM DATA (IN INTERNAL MEMORY) DUMP FORMAT
352Bytes = 7*50+2 -> 8*50+(2+1) => 403Bytes
(Refer TABLE 1)

NOTE 2: GLOBAL DATA (IN INTERNAL MEMORY) DUMP FORMAT
164Bytes = 7*23+3 -> 8*23+(3+1) => 188Bytes
(Refer TABLE 7)

NOTE 3: The dump data conversion

```
   DATA ( 1set = 8bit x 7Byte )
   b7     ~      b0   b7     ~      b0   b7   ~~    b0   b7     ~
b0
   +-+-+-+-+-+-+-+-+  +-+-+-+-+-+-+-+-+  +-+-+-~~-+-+-+  +-+-+-+-+-+-
+-+-+
   | | | | | | | | |  | | | | | | | | |  | | |    | | |  | | | | | | |
| |
   +-+-+-+-+-+-+-+-+  +-+-+-+-+-+-+-+-+  +-+-+-~~-+-+-+  +-+-+-+-+-+-
+-+-+
         7n+0               7n+1          7n+2 ~~ 7n+5         7n+6

    MIDI DATA ( 1set = 7bit x 8Byte )
      b7b7b7b7b7b7b7     b6    ~     b0     b6 ~~    b0     b6    ~
b0
   +-+-+-+-+-+-+-+-+  +-+-+-+-+-+-+-+-+  +-+-+-~~-+-+-+  +-+-+-+-+-+-
+-+-+
   |0| | | | | | | |  |0| | | | | | | |  |0| |    | | |  |0| | | | | |
| |
   +-+-+-+-+-+-+-+-+  +-+-+-+-+-+-+-+-+  +-+-+-~~-+-+-+  +-+-+-+-+-+-
+-+-+
   7n+6,5,4,3,2,1,0         7n+0          7n+1 ~~ 7n+5         7n+6

 NOTE 4: MIDI Parameter Change Message Format
         F0,42,3n,00,01,22,41,pp,PP,qq,QQ,vv,VV,F7
          n :Global MIDI Ch.
         00,01,22 :RK-100S ID

     parameter ID     :PPpp = 0~3FFF
     parameter sub ID :QQpp = 0~3FFF
     parameter value  :VVvv = signed value

        VV(PP)(QQ):0MMMMMMM
        vv(pp)(qq):0LLLLLLL
        value(No.):MMMMMM MLLLLLLL

    (Refer TABLE 1)


 TABLE 1 : PROGRAM PARAMETER ( 1 PROG, CURRENT PROG )
  No. : No. in the PROGRAM DUMP DATA.
  Parameter ID & SUB ID [Hex]: for PARAMETER CHANGE.
+-----------+-------------------+-----------------------------------
+----------+
|  No. (bit)|    PARAMETER      |  VALUE        DESCRIPTION         |
ID:SubID |
+-----------+-------------------+-----------------------------------
+----------+
| 0~7       | Program Name      | ASCII code [0]~[7]=Head~Tail      |
00:00~07 |
+-----------+-------------------+-----------------------------------
```

```
+----------+
| 8    B6~7 | Voice Mode        | 0~3=Single/Layer/Split/Multi      |
00:19    |
|    -------+-------------------+-----------------------------------
+----------+
|      B4~5 | Arp Timbre select | 0~2=Timb1/Timb2/Timb1+2           |
00:18    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~3 | Octave SW         | 8+/-3=0+/-3                       |
00:1D    |
+-----------+-------------------+-----------------------------------
+----------+
| 9~11      | (Reserved)                                            |
00:--    |
+-----------+-------------------+-----------------------------------
+----------+
| 12   B4~7 | Scale Key         | 0~11=C,C#,D,D#,E,F,F#,G,G#,A,A#,B |
00:1E    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~3 | Scale Type        | 0~9=Equal Temp~User Scale  *T01-2 |
00:17    |
+-----------+-------------------+-----------------------------------
+----------+
| 13        | Timbre2 MIDI Ch.  | 0~15,16~=1~16,Glb                 |
00:1A    |
+-----------+-------------------+-----------------------------------
+----------+
| 14        | Center Key        | 0~127=C-1~G9                      |
00:1B    |
+-----------+-------------------+-----------------------------------
+----------+
| 15        | (Reserved)                                            |
00:--    |
+-----------+-------------------+-----------------------------------
+----------+
|  Timbre parameter
|
+-----------+-------------------+-----------------------------------
+----------+
| 16~111    | TIMBRE1 DATA      | Timbre parameter [96]   (TABLE 2) |
1x:00~   |
+-----------+-------------------+-----------------------------------
+----------+
| 112~207   | TIMBRE2 DATA      | Timbre parameter [96]   (TABLE 2) |
2x:00~   |
+-----------+-------------------+-----------------------------------
+----------+
|  Vocoder parameter
```

|
+----------+----------+----------
+----------+
| 208~285 | VOCODER DATA | Vocoder parameter [78] (TABLE 3) |
4x:00~ |
+----------+----------+----------
+----------+
| FX parameter
|
+----------+----------+----------
+----------+
| 286~333 | FX DATA | Fx parameter [48]   (TABLE 4) |
5x:00~ |
+----------+----------+----------
+----------+
| Arpeggio common parameter
|
+----------+----------+----------
+----------+
| 334 | tempo (LSB) | 20~300=20~300 |
60:00 |
| 335 | (MSB) | |
|
+----------+----------+----------
+----------+
| 336 B7 | Arpg On/Off | 0,1=Off,On |
60:01 |
| -------+----------+----------
+----------+
| B6 | Key Sync | 0,1=Off,On |
60:02 |
| -------+----------+----------
+----------+
| B0~5 | not use | (0,0,0,0,0,0) |
60:-- |
+----------+----------+----------
+----------+
| 337 | (dummy byte)
|
+----------+----------+----------
+----------+
| Arpeggio parameter
|
+----------+----------+----------
+----------+
| 338~345 | ARPEGGIO DATA | Arpeggio parameter [8] (TABLE 5) |
61:00~4F |
+----------+----------+----------
+----------+
| Ribbon parameter

```
|
+-----------+-------------------+-----------------------------------
+----------+
| 346  B7   | ShortRibbon LockSW| 0,1=Lock Off,On                  |
70:08    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~6 | ShortRibbon Assign| 0~127=CC#000~127                 |
70:07    |
+-----------+-------------------+-----------------------------------
+----------+
| 347  B7   | LongRbn Scale SW  | 0,1=Dis,Ena                      |
70:05    |
|    -------+-------------------+-----------------------------------
+----------+
|      B6   | (Reserved)        | (0)                              |
00:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B1~5 | LongRbn Scale Key | 16+/-12=downC ~ C ~ upC          |
70:06    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0   | ShortRbn Setting  | 0,1=Pitch,Modulation             |
70:04    |
+-----------+-------------------+-----------------------------------
+----------+
| 348  B6~7 | LongRbn Timb Sel  | 0~2=Timb1/Timb2/Timb1+2          |
70:03    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~5 | LongRbn ScaleType | 0,1~=Scale Off, Chromatic~ *T01-1 |
70:00    |
+-----------+-------------------+-----------------------------------
+----------+
| 349       | LongRbn ScaleRange| 64+/-8=0+/-8 Octave              |
70:01    |
+-----------+-------------------+-----------------------------------
+----------+
| 350       | LongRbn PitchRange| 64+/-8=0+/-8 Octave              |
70:02    |
+-----------+-------------------+-----------------------------------
+----------+
| 351       | Category Number   | 0~15                             |
00:1C    |
+-----------+-------------------+-----------------------------------
+----------+
```

TABLE 2 : TIMBRE PARAMETER (1 TIMBRE)

No. : No. in the PROGRAM DUMP DATA.
Parameter ID & SUB ID [Hex]: for PARAMETER CHANGE.

No. (bit)	PARAMETER	VALUE	DESCRIPTION	ID:SubID
Timbre Program parameter				
+00~91	PROGRAM DATA	Program Parameter [92] (TABLE 6)		x1~x2:00~
Timbre EQ				
+92	Low Freq	0~33=20~1000[Hz]	*T02-1	x9:00
+93	Low Gain	64+/-30=0+/-30	*T02-2	x9:01
+94	Hi Freq	0~25=1.00~20.0[KHz]	*T02-3	x9:02
+95	Hi Gain	64+/-30=0+/-30	*T02-2	x9:03

TABLE 3 : VOCODER PARAMETER
No. : No. in the PROGRAM DUMP DATA.
Parameter ID & SUB ID [Hex]: for PARAMETER CHANGE.

No. (bit)	PARAMETER	VALUE	DESCRIPTION	ID:SubID
+0	B7	SW	0,1=Dis,Ena	40:00

```
+----------+
|      B6   | not use           | (0)                                |
40:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B5   | HPF Gate          | 0,1=Dis,Ena                        |
40:04    |
|    -------+-------------------+-----------------------------------
+----------+
|      B2~4 | not use           | (0,0,0)                            |
40:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0,1 | Select            | 0,1=Input,Timb2                    |
40:01    |
+-----------+-------------------+-----------------------------------
+----------+
| +1        | Gate Sens         | 0~127                              |
40:06    |
+-----------+-------------------+-----------------------------------
+----------+
| +2        | Threshold         | 0~127                              |
40:07    |
+-----------+-------------------+-----------------------------------
+----------+
| +3        | HPF Level         | 0~127                              |
40:08    |
+-----------+-------------------+-----------------------------------
+----------+
| +4        | Direct Level      | 0~127                              |
40:09    |
+-----------+-------------------+-----------------------------------
+----------+
| +5        | Timbre1 Level     | 0~127                              |
40:0A    |
+-----------+-------------------+-----------------------------------
+----------+
| +6        | Timbre2 Level     | 0~127                              |
40:0B    |
+-----------+-------------------+-----------------------------------
+----------+
| +7        | Vocoder Level     | 0~127                              |
40:0C    |
+-----------+-------------------+-----------------------------------
+----------+
|  16 Band parameter
|
+-----------+-------------------+-----------------------------------
+----------+
| +8        | Band1 Panpot      | 0,1~64~127=L63,L63~CNT~R63         |
```

41:00 |
+----------+----------+----------
+----------+
| +9 | Band1 Level | 0~127 |
41:01 |
+----------+----------+----------
+----------+
| +10,11 | Band2 parameter | same as Band1 |
41:02,03 |
+----------+----------+----------
+----------+
| +12,13 | Band3 parameter | same as Band1 |
41:04,05 |
+----------+----------+----------
+----------+
| +14,15 | Band4 parameter | same as Band1 |
41:06,07 |
+----------+----------+----------
+----------+
| +16,17 | Band5 parameter | same as Band1 |
41:08,09 |
+----------+----------+----------
+----------+
| +18,19 | Band6 parameter | same as Band1 |
41:0A,0B |
+----------+----------+----------
+----------+
| +20,21 | Band7 parameter | same as Band1 |
41:0C,0D |
+----------+----------+----------
+----------+
| +22,23 | Band8 parameter | same as Band1 |
41:0E,0F |
+----------+----------+----------
+----------+
| +24,25 | Band9 parameter | same as Band1 |
41:10,11 |
+----------+----------+----------
+----------+
| +26,27 | Band10 parameter | same as Band1 |
41:12,13 |
+----------+----------+----------
+----------+
| +28,29 | Band11 parameter | same as Band1 |
41:14,15 |
+----------+----------+----------
+----------+
| +30,31 | Band12 parameter | same as Band1 |
41:16,17 |
+----------+----------+----------

+----------+
| +32,33 | Band13 parameter | same as Band1 |
41:18,19 |
+----------+----------+----------
+----------+
| +34,35 | Band14 parameter | same as Band1 |
41:1A,1B |
+----------+----------+----------
+----------+
| +36,37 | Band15 parameter | same as Band1 |
41:1C,1D |
+----------+----------+----------
+----------+
| +38,39 | Band16 parameter | same as Band1 |
41:1E,1F |
+----------+----------+----------
+----------+
| FILTER
|
+----------+----------+----------
+----------+
| +40 B7 | not use | (0) |
42:-- |
| -------+----------+----------
+----------+
| B4~6 | Shift | 4+/-2=0+/-2 |
42:01 |
| -------+----------+----------
+----------+
| B0~3 | Fc Mod Source | 0~11=Filter EG~MIDI3 *T03-1 |
42:00 |
+----------+----------+----------
+----------+
| +41 | (dummy byte) |
--:-- |
+----------+----------+----------
+----------+
| +42 | Cutoff offset | 64+/-63=0+/-63 |
42:10 |
+----------+----------+----------
+----------+
| +43 | Resonance | 0~127 |
42:11 |
+----------+----------+----------
+----------+
| +44 | Fc Mod Intencity | 64+/-63=0+/-63 |
42:12 |
+----------+----------+----------
+----------+
| +45 | E.F.Sens | 0~127=0~126,Hold |

42:13 |
+----------+----------+----------
+----------+
| Formant Hold Data
|
+----------+----------+----------
+----------+
| +46 | Band1 (LSB) | 0~32767=0~32767 |
43:00 |
| +47 | (MSB) | |
|
+----------+----------+----------
+----------+
| +48,49 | Band2 parameter | same as Band1 |
43:01 |
+----------+----------+----------
+----------+
| +50,51 | Band3 parameter | same as Band1 |
43:02 |
+----------+----------+----------
+----------+
| +52,53 | Band4 parameter | same as Band1 |
43:03 |
+----------+----------+----------
+----------+
| +54,55 | Band5 parameter | same as Band1 |
43:04 |
+----------+----------+----------
+----------+
| +56,57 | Band6 parameter | same as Band1 |
43:05 |
+----------+----------+----------
+----------+
| +58,59 | Band7 parameter | same as Band1 |
43:06 |
+----------+----------+----------
+----------+
| +60,61 | Band8 parameter | same as Band1 |
43:07 |
+----------+----------+----------
+----------+
| +62,63 | Band9 parameter | same as Band1 |
43:08 |
+----------+----------+----------
+----------+
| +64,65 | Band10 parameter | same as Band1 |
43:09 |
+----------+----------+----------
+----------+
| +66,67 | Band11 parameter | same as Band1 |

```
43:0A    |
+-----------+-------------------+-----------------------------------
+----------+
| +68,69    | Band12 parameter  | same as Band1                     |
43:0B    |
+-----------+-------------------+-----------------------------------
+----------+
| +70,71    | Band13 parameter  | same as Band1                     |
43:0C    |
+-----------+-------------------+-----------------------------------
+----------+
| +72,73    | Band14 parameter  | same as Band1                     |
43:0D    |
+-----------+-------------------+-----------------------------------
+----------+
| +74,75    | Band15 parameter  | same as Band1                     |
43:0E    |
+-----------+-------------------+-----------------------------------
+----------+
| +76,77    | Band16 parameter  | same as Band1                     |
43:0F    |
+-----------+-------------------+-----------------------------------
+----------+
```

TABLE 4 : EFFECT PARAMETER
No. : No. in the PROGRAM DUMP DATA.
Parameter ID & SUB ID [Hex]: for PARAMETER CHANGE.

```
+-----------+-------------------+-----------------------------------
+----------+
|  No. (bit)|    PARAMETER      |  VALUE        DESCRIPTION         |
ID:SubID |
+-----------+-------------------+-----------------------------------
+----------+
|  Effect1
|
+-----------+-------------------+-----------------------------------
+----------+
| +0    B7  | (Reserved)        |                                   |
50:--    |
|    -------+-------------------+-----------------------------------
+----------+
|       B0~6| Effect1 Type      | 0~17=NoEffect~GrainShifter *T04-1 |
50:01    |
+-----------+-------------------+-----------------------------------
+----------+
| +1        | (dummy byte)                                          |
50:--    |
+-----------+-------------------+-----------------------------------
+----------+
```

| Long Ribbon Parameter Assign |
|
+----------+----------+----------
+----------+
| +2 B5~7| not use | (0,0,0) |
50:-- |
| -------+----------+----------
+----------+
| B0~4| LongRbn Assign | 0~19=param1~20 |
50:02 |
+----------+----------+----------
+----------+
| +3 B1~7| not use | (0,0,0,0,0,0,0) |
50:-- |
| -------+----------+----------
+----------+
| B0 | LongRbn Polarity | 0/1=Forward/Reverse |
50:03 |
+----------+----------+----------
+----------+
| +4 | Effect1 param 1 | *T04-2 |
50:10 |
+----------+----------+----------
+----------+
| +5 | Effect1 param 2 | *T04-2 |
50:11 |
+----------+----------+----------
+----------+
| +6 | Effect1 param 3 | *T04-2 |
50:12 |
+----------+----------+----------
+----------+
| +7 | Effect1 param 4 | *T04-2 |
50:13 |
+----------+----------+----------
+----------+
| +8 | Effect1 param 5 | *T04-2 |
50:14 |
+----------+----------+----------
+----------+
| +9 | Effect1 param 6 | *T04-2 |
50:15 |
+----------+----------+----------
+----------+
| +10 | Effect1 param 7 | *T04-2 |
50:16 |
+----------+----------+----------
+----------+
| +11 | Effect1 param 8 | *T04-2 |
50:17 |

+----------+----------+----------
+----------+
| +12 | Effect1 param 9 | *T04-2 |
50:18 |
+----------+----------+----------
+----------+
| +13 | Effect1 param 10 | *T04-2 |
50:19 |
+----------+----------+----------
+----------+
| +14 | Effect1 param 11 | *T04-2 |
50:1A |
+----------+----------+----------
+----------+
| +15 | Effect1 param 12 | *T04-2 |
50:1B |
+----------+----------+----------
+----------+
| +16 | Effect1 param 13 | *T04-2 |
50:1C |
+----------+----------+----------
+----------+
| +17 | Effect1 param 14 | *T04-2 |
50:1D |
+----------+----------+----------
+----------+
| +18 | Effect1 param 15 | *T04-2 |
50:1E |
+----------+----------+----------
+----------+
| +19 | Effect1 param 16 | *T04-2 |
50:1F |
+----------+----------+----------
+----------+
| +20 | Effect1 param 17 | *T04-2 |
50:20 |
+----------+----------+----------
+----------+
| +21 | Effect1 param 18 | *T04-2 |
50:21 |
+----------+----------+----------
+----------+
| +22 | Effect1 param 19 | *T04-2 |
50:22 |
+----------+----------+----------
+----------+
| +23 | Effect1 param 20 | *T04-2 |
50:23 |
+----------+----------+----------
+----------+

```
|  Effect2
|
+-----------+-------------------+-----------------------------------
+----------+
| +24~47    | Effect2 parameter | same as Effect1                   |
50:30~53 |
+-----------+-------------------+-----------------------------------
+----------+
```

TABLE 5 : ARPEGGIO PARAMETER
No. : No. in the PROGRAM DUMP DATA.
Parameter ID & SUB ID [Hex]: for PARAMETER CHANGE.

```
+-----------+-------------------+-----------------------------------
+----------+
|  No. (bit)|    PARAMETER      |  VALUE        DESCRIPTION         |
ID:SubID |
+-----------+-------------------+-----------------------------------
+----------+
| +0   B4~7 | Resolution        | 0~8=1/32~1/1               *T05-1 |
61:01    |
|    -------+-------------------+-----------------------------------
+----------+
|      B3   | not use           | (0)                               |
61:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~2 | Type              | 0~5=Up~Trigger             *T05-2 |
61:00    |
+-----------+-------------------+-----------------------------------
+----------+
| +1   B7   | Latch             | 0,1=Off,On                        |
61:06    |
|    -------+-------------------+-----------------------------------
+----------+
|      B5,6 | Octave Range      | 0~3=1~4 Octave                    |
61:02    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~4 | Last step         | 0~7=1~8 step                      |
61:03    |
+-----------+-------------------+-----------------------------------
+----------+
| +2        | gate time         | 0~100=0~100[%]                    |
61:04    |
+-----------+-------------------+-----------------------------------
+----------+
| +3        | Swing             | 64+/-50=0+/-100[%]         *T05-3 |
61:05    |
+-----------+-------------------+-----------------------------------
```

+4	B0	Step1 SW	0,1=Off,On
61:10	B1	Step2 SW	0,1=Off,On
61:11	B2	Step3 SW	0,1=Off,On
61:12	B3	Step4 SW	0,1=Off,On
61:13	B4	Step5 SW	0,1=Off,On
61:14	B5	Step6 SW	0,1=Off,On
61:15	B6	Step7 SW	0,1=Off,On
61:16	B7	Step8 SW	0,1=Off,On
61:17			
+5~+7	(dummy bytes)		
61:--			

TABLE 6 : TIMBRE PROGRAM PARAMETER
No. : No. in the PROGRAM DUMP DATA
Parameter ID & SUB ID [Hex]: for PARAMETER CHANGE.

No. (bit)	PARAMETER	VALUE	DESCRIPTION	ID:SubID
+0~3	(Reserved)			+0:--

```
+-----------+-------------------+-----------------------------------
+----------+
|  Voice
|
+-----------+-------------------+-----------------------------------
+----------+
| +4   B4~7 | not use           | (0,0,0,0)                         |
+0:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~3 | Unison Voice      | 0,1~3=OFF,2Voice~4Voice           |
+0:08    |
+-----------+-------------------+-----------------------------------
+----------+
| +5        | Unison Detune     | 0~99=0~99[cent]                   |
+0:09    |
+-----------+-------------------+-----------------------------------
+----------+
| +6        | Unison Spread     | 0~127                             |
+0:0A    |
+-----------+-------------------+-----------------------------------
+----------+
| +7   B6~7 | Voice Assign      | 0~2=Mono1,Mono2,Poly              |
+0:0B    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~5 | not use           | (0,0,0,0,0)                       |
+0:--    |
+-----------+-------------------+-----------------------------------
+----------+
| +8        | (dummy byte)                                          |
+0:--    |
+-----------+-------------------+-----------------------------------
+----------+
|  Pitch
|
+-----------+-------------------+-----------------------------------
+----------+
| +9        | Analog Tuning     | 0~127                             |
+0:13    |
+-----------+-------------------+-----------------------------------
+----------+
| +10       | Transpose         | 64+/-48=0+/-48[note]              |
+0:14    |
+-----------+-------------------+-----------------------------------
+----------+
| +11       | Detune            | 64+/-50=0+/-50[cent]              |
+0:15    |
+-----------+-------------------+-----------------------------------
+----------+
```

```
| +12       | Vibrato Int.      | 64+/-63=0+/-2400[cent]     *T06-6 |
+0:16    |
+-----------+-------------------+-----------------------------------
+----------+
| +13       | Bend Range        | 64+/-12=0+/-12[note]              |
+0:10    |
+-----------+-------------------+-----------------------------------
+----------+
| +14       | Portamento Time   | 0~127                             |
+0:11    |
+-----------+-------------------+-----------------------------------
+----------+
| +15       | (dummy bytes)                                         |
+0:--    |
+-----------+-------------------+-----------------------------------
+----------+
|  OSC1
|
+-----------+-------------------+-----------------------------------
+----------+
| +16  B6,7 | not use           | (0,0)                             |
+0:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B4,5 | Osc Mod           | 0~3=Waveform,Cross,Unison,VPM     |
+0:18    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0~3 | Wave Type         | 0~7=Saw~Audio In           *T06-1 |
+0:17    |
+-----------+-------------------+-----------------------------------
+----------+
| +17       | Waveform CTRL1    | 0~127                             |
+0:19    |
+-----------+-------------------+-----------------------------------
+----------+
| +18       | Waveform CTRL2    | 0~127                             |
+0:1A    |
+-----------+-------------------+-----------------------------------
+----------+
| +19       | PCM/DWGS          | 0~64                              |
+0:1B    |
|           | wave select       | (when Osc1 Wave is "PCM/DWGS")    |
|
+-----------+-------------------+-----------------------------------
+----------+
| +20       | (dummy byte)                                          |
+0:--    |
+-----------+-------------------+-----------------------------------
+----------+
```

```
|  OSC2
|
+-----------+-------------------+-----------------------------------
+----------+
| +21  B6,7 | not use           | (0,0)                             |
+0:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B4,5 | Mod Select        | 0~3=Off,Ring,Sync,RingSync        |
+0:21    |
|    -------+-------------------+-----------------------------------
+----------+
|      B2,3 | not use           | (0,0)                             |
+0:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0,1 | Wave Type         | 0~3=Saw,Pulse,Tri,Sine            |
+0:20    |
+-----------+-------------------+-----------------------------------
+----------+
| +22       | Semitone          | 64+/-24=0+/-24[note]              |
+0:22    |
+-----------+-------------------+-----------------------------------
+----------+
| +23       | Tune              | 64+/-63=0+/-63                    |
+0:23    |
+-----------+-------------------+-----------------------------------
+----------+
|  Mixer
|
+-----------+-------------------+-----------------------------------
+----------+
| +24       | Osc1 Level        | 0~127                             |
+0:28    |
+-----------+-------------------+-----------------------------------
+----------+
| +25       | Osc2 Level        | 0~127                             |
+0:29    |
+-----------+-------------------+-----------------------------------
+----------+
| +26       | Noise Level       | 0~127                             |
+0:2A    |
+-----------+-------------------+-----------------------------------
+----------+
| +27       | (dummy byte)                                          |
+0:--    |
+-----------+-------------------+-----------------------------------
+----------+
|  Filter
|
```

```
+-----------+-------------------+-----------------------------------
+----------+
| +28  B6,7 | not use           | (0,0)                             |
+0:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B4,5 | Filter2 Type      | 0~2=LPF,HPF,BPF                   |
+0:40    |
|    -------+-------------------+-----------------------------------
+----------+
|      B2,3 | not use           | (0,0)                             |
+0:--    |
|    -------+-------------------+-----------------------------------
+----------+
|      B0,1 | Filter  Routing   | 0~3=Single,Serial,Parallel,Indiv  |
+0:30    |
+-----------+-------------------+-----------------------------------
+----------+
| +29       | Filter1 Balance   | 0~127                             |
+0:31    |
+-----------+-------------------+-----------------------------------
+----------+
| +30       | Filter1 Cutoff    | 0~127                             |
+0:32    |
+-----------+-------------------+-----------------------------------
+----------+
| +31       | Filter1 Resonance | 0~127                             |
+0:33    |
+-----------+-------------------+-----------------------------------
+----------+
| +32       | F1 Filter EG Int. | 64+/-63=0+/-63                    |
+0:34    |
+-----------+-------------------+-----------------------------------
+----------+
| +33       | F1 Keyboard Track | 64+/-63=0+/-2.00          *T06-7 |
+0:35    |
+-----------+-------------------+-----------------------------------
+----------+
| +34       | F1 Velocity Sens  | 64+/-63=0+/-63                    |
+0:36    |
+-----------+-------------------+-----------------------------------
+----------+
| +35       | Filter2 Cutoff    | 0~127                             |
+0:42    |
+-----------+-------------------+-----------------------------------
+----------+
| +36       | Filter2 Resonance | 0~127                             |
+0:43    |
+-----------+-------------------+-----------------------------------
+----------+
```

| +37 | F2 Filter EG Int. | 64+/-63=0+/-63 | |
+0:44 |
+----------+----------+----------
+----------+
| +38 | F2 Keyboard Track | 64+/-63=0+/-2.00 *T06-7 |
+0:45 |
+----------+----------+----------
+----------+
| +39 | F2 Velocity Sens | 64+/-63=0+/-63 | |
+0:46 |
+----------+----------+----------
+----------+
| Amp
|
+----------+----------+----------
+----------+
| +40 | Level | 0~127 | |
+0:50 |
+----------+----------+----------
+----------+
| +41 B6,7 | not use | (0,0) | |
+0:-- |
| -------+----------+----------
+----------+
| B4,5 | Drive/WS position | 0~1=Pre Flt1,Pre Amp | |
+0:52 |
| -------+----------+----------
+----------+
| B0~3 | not use | (0,0,0,0) | |
+0:-- |
+----------+----------+----------
+----------+
| +42 B4~7 | not use | (0,0) | |
+0:-- |
| -------+----------+----------
+----------+
| B0~3 | WaveShape Type | 0~11=Off,Drive~LvlBoost *T06-5 |
+0:51 |
+----------+----------+----------
+----------+
| +43 | Depth | 0~127 | |
+0:54 |
+----------+----------+----------
+----------+
| +44 | Panpot | 0,1~64~127=L63,L63~CNT~R63 | |
+0:55 |
+----------+----------+----------
+----------+
| +45 | Key Track | 64+/-63=0+/-63 | |
+0:56 |

```
+-----------+-------------------+-----------------------------------
+----------+
| +46       | Punch Level       | 0~127                             |
+0:57    |
+-----------+-------------------+-----------------------------------
+----------+
| +47       | (dummy byte)                                          |
+0:--    |
+-----------+-------------------+-----------------------------------
+----------+
|  Filter EG
|
+-----------+-------------------+-----------------------------------
+----------+
| +48       | Attack Time       | 0~127                             |
+0:60    |
+-----------+-------------------+-----------------------------------
+----------+
| +49       | Decay Time        | 0~127                             |
+0:61    |
+-----------+-------------------+-----------------------------------
+----------+
| +50       | Sustain Level     | 0~127                             |
+0:62    |
+-----------+-------------------+-----------------------------------
+----------+
| +51       | Release Time      | 0~127                             |
+0:63    |
+-----------+-------------------+-----------------------------------
+----------+
| +52       | LevelVelocitySens | 64+/-63=0+/-63                    |
+0:64    |
+-----------+-------------------+-----------------------------------
+----------+
| +53       | (dummy byte)                                          |
+0:--    |
+-----------+-------------------+-----------------------------------
+----------+
|  Amp EG
|
+-----------+-------------------+-----------------------------------
+----------+
| +54       | Attack Time       | 0~127                             |
+0:70    |
+-----------+-------------------+-----------------------------------
+----------+
| +55       | Decay Time        | 0~127                             |
+0:71    |
+-----------+-------------------+-----------------------------------
+----------+
```

+56	Sustain Level	0~127	+0:72
+57	Release Time	0~127	+0:73
+58	LevelVelocitySens	64+/-63=0+/-63	+0:74
+59	(dummy byte)		+0:--

Assignable EG

+60	Attack Time	0~127	+0:80
+61	Decay Time	0~127	+0:81
+62	Sustain Level	0~127	+0:82
+63	Release Time	0~127	+0:83
+64	LevelVelocitySens	64+/-63=0+/-63	+0:84
+65	(dummy byte)		+0:--

LFO1

+66 B4~7	not use	(0,0,0,0)	+0:--

| -------+-------------------+-----------------------------------
+----------+
| B0~3 | Wave | 0~4=Saw,Square,Tri,S/H,Random |
+0:90 |
+----------+-------------------+-----------------------------------
+----------+
| +67 | Frequency | 0~127=0.01~100[kHz] *T06-2 |
+0:92 |
+----------+-------------------+-----------------------------------
+----------+
| +68 B7 | BPM Sync | 0,1=Off,On |
+0:93 |
| -------+-------------------+-----------------------------------
+----------+
| B5,6 | Key Sync | 0~2=Off,Timbre,Voice |
+0:94 |
| -------+-------------------+-----------------------------------
+----------+
| B0~4 | not use | (0,0,0,0,0) |
+0:-- |
+----------+-------------------+-----------------------------------
+----------+
| +69 B5~7 | not use | (0,0,0) |
+0:-- |
| -------+-------------------+-----------------------------------
+----------+
| B0~4 | Sync Note | 0~16=8/1~1/64 *T06-3 |
+0:96 |
+----------+-------------------+-----------------------------------
+----------+
| LFO2
|
+----------+-------------------+-----------------------------------
+----------+
| +70 B4~7 | not use | (0,0,0,0) |
+0:-- |
| -------+-------------------+-----------------------------------
+----------+
| B0~3 | Wave | 0~4=Saw,Square+,Sine,S/H,Random |
+0:A0 |
+----------+-------------------+-----------------------------------
+----------+
| +71 | Frequency | 0~127=0.01~100[kHz] *T06-2 |
+0:A2 |
+----------+-------------------+-----------------------------------
+----------+
| +72 B7 | BPM Sync | 0,1=Off,On |
+0:A3 |
| -------+-------------------+-----------------------------------
+----------+

| B5,6 | Key Sync | 0~2=Off,Timbre,Voice |
+0:A4 |
| -------+-------+-------
+----------+
| B0~4 | not use | (0,0,0,0,0) |
+0:-- |
+----------+-------+-------
+----------+
| +73 B5~7 | not use | (0,0,0) |
+0:-- |
| -------+-------+-------
+----------+
| B0~4 | Sync Note | 0~16=8/1~1/64 *T06-3 |
+0:A6 |
+----------+-------+-------
+----------+
| Virtual Patch
|
+----------+-------+-------
+----------+
| +74 | V-Patch 1 Source | 0~11=FilterEG~LongRbn(Flt) *T03-2 |
+1:00 |
+----------+-------+-------
+----------+
| +75 | V-Patch 1 Dest. | 0~39=Pitch~LongRbn(Flt)Int.*T06-4 |
+1:01 |
+----------+-------+-------
+----------+
| +76 | V-Patch 1 Int. | 64+/-63=0+/-63 |
+1:02 |
+----------+-------+-------
+----------+
| +77 | V-Patch 2 Source | 0~11=FilterEG~LongRbn(Flt) *T03-2 |
+1:04 |
+----------+-------+-------
+----------+
| +78 | V-Patch 2 Dest. | 0~39=Pitch~LongRbn(Flt)Int.*T06-4 |
+1:05 |
+----------+-------+-------
+----------+
| +79 | V-Patch 2 Int. | 64+/-63=0+/-63 |
+1:06 |
+----------+-------+-------
+----------+
| +80 | V-Patch 3 Source | 0~11=FilterEG~LongRbn(Flt) *T03-2 |
+1:08 |
+----------+-------+-------
+----------+
| +81 | V-Patch 3 Dest. | 0~39=Pitch~LongRbn(Flt)Int.*T06-4 |
+1:09 |

+82	V-Patch 3 Int.	64+/-63=0+/-63	+1:0A
+83	V-Patch 4 Source	0~11=FilterEG~LongRbn(Flt) *T03-2	+1:0C
+84	V-Patch 4 Dest.	0~39=Pitch~LongRbn(Flt)Int.*T06-4	+1:0D
+85	V-Patch 4 Int.	64+/-63=0+/-63	+1:0E
+86	V-Patch 5 Source	0~11=FilterEG~LongRbn(Flt) *T03-2	+1:10
+87	V-Patch 5 Dest.	0~39=Pitch~LongRbn(Flt)Int.*T06-4	+1:11
+88	V-Patch 5 Int.	64+/-63=0+/-63	+1:12
+89,90	(Reserved)		+1:--
+91	LongRbn(Flr) Int.	64+/-63=0+/-63	+1:16

TABLE 7 : GLOBAL PARAMETER
No. : No. in the GLOBAL DUMP DATA

No. (bit)	PARAMETER	VALUE DESCRIPTION
0	Master Tune	0+/-100=430~440~450
1	Transpose	12+/-12=0+/-12
2 B7	(Reserved)	(0)

	B6	not use	(0)
	B5	not use	(0)
	B4	Power Saving	0,1=Off,On
	B3	not use	(0)
	B2	Position	0,1=PostKBD,PreTG
	B0,1	not use	(0,0)
3	B4~7	not use	(0,0,0,0)
	B0~3	Vel.Curve	0~7,8=1~8,const127
4	B4~7	not use	(0,0,0,0)
	B0~3	Global MIDI Ch.	0~15=1~16 (not Receive)
5	B7	Local Ctrl	0,1=Off,On
	B3~6	(Reserved)	(0,0,0,0)
	B2	Clock	0,1=Auto,Internal
	B0,1	(Reserved)	(0,0)
6		MIDI1 Ctrl No.	0~120=P.Bend~CC#21+/- *T07-1
7		MIDI2 Ctrl No.	0~120=P.Bend~CC#21+/- *T07-1
8		MIDI3 Ctrl No.	0~120=P.Bend~CC#21+/- *T07-1
9	B5~7	(Reserved)	(0,0,0)
	B4	P.Bend Filter	0,1=Dis,Ena
	B3	CtrlChg Filter	0,1=Dis,Ena
	B1,2	(Reserved)	(0,0)
	B0	ProgChg Filter	0,1=Dis,Ena
10~15		(dummy bytes)	
User Scale Parameter			
16~27		User Scale[C]~[B]	0+/-63=+/-63[cent]

Long Ribbon Parameter		
28	LongRbn MIDI Ch.	0~15,16~=1~16,Global
29	LongRbn Velocity	0,1~127=Off,1~127
30~31	(dummy bytes)	
Switch & Ribbon Slider Ctrl Change No. Map		
32~95	[00]~[63] Ctrl Change No.	*T07-2 -1,0~95,102~119 =OFF,CC#00~95,#102~119
96'97	(dummy bytes)	
98 B1~7	not use	(0,0,0,0,0,0,0)
B0	Battery Type	0,1=Alkali,Ni-MH
99 B1~7	not use	(0,0,0,0,0,0,0)
B0	Auto Power Off	0,1=Dis,Ena(4hours) (not Receive)
Favorite (Program Memory) Section		
100	Bank#1 Fav"A" Prg#	0~199=Program#001~200
101	Bank#1 Fav"B" Prg#	0~199=Program#001~200
102	Bank#1 Fav"C" Prg#	0~199=Program#001~200
103	Bank#1 Fav"D" Prg#	0~199=Program#001~200
104	Bank#1 Fav"E" Prg#	0~199=Program#001~200
105	Bank#1 Fav"F" Prg#	0~199=Program#001~200
106	Bank#1 Fav"G" Prg#	0~199=Program#001~200
107	Bank#1 Fav"H" Prg#	0~199=Program#001~200
108~115	Bank#2 Favorite	same as Bank#1
116~123	Bank#3 Favorite	same as Bank#1
123~131	Bank#4 Favorite	same as Bank#1
132~139	Bank#5 Favorite	same as Bank#1

140~163	(Reserved)	

*T01-1 :

0:"Scale Off"	9:Harmonic minor	18:Raga Gamanasrama 27:Ryukyu
1:Chromatic	10:Melodic minor	19:Raga Todi 28:Chinese
2:Ionian	11:Major Blues	22:Arabiac 29:Bass Line
3:Dorian	12:minor Blues	20:Spanish 30:Wholetone
4:Phrygian	13:Diminished	21:Gypsy 31:minor 3rd Interval
5:Lydian	14:Combination Diminished	23:Egyptian 32:3rd Interval
6:Mixolydian	15:Major Pentatonic	24:Hawaiian 33:4th Interval
7:Aeolian	16:minor Pentatonic	25:Bali Island Pelog 34:5th Interval
8:Locrian	17:Raga Bhairav	26:Japanese 35:Octave

*T01-2 :

0: Equal Temp	5: Werckmeist
1: Pure Major	6: Kirnberger
2: Pure Minor	7: Slendoro
3: Arabic	8: Pelog
4: Pythagorea	9: User Scale

*T02-1 :

0: 20	10: 63	20: 200	30: 710
1: 22	11: 71	21: 224	31: 800
2: 25	12: 80	22: 250	32: 900
3: 28	13: 90	23: 280	33: 1000
4: 32	14: 10	24: 315	
5: 36	15: 11	25: 400	
6: 40	16: 12	26: 450	
7: 45	17: 14	27: 500	
8: 50	18: 16	28: 560	
9: 56	19: 18	29: 630	

*T02-2 :

34: -15.0	65: +00.5
35: -14.5	66: +01.0
36: -14.0	67: +01.5
37: -13.5	68: +02.0
38: -13.0	69: +02.5
39: -12.5	70: +03.0

```
      40: -12.0   71: +03.5
      41: -11.5   72: +04.0
      42: -11.0   73: +04.5
      43: -10.5   74: +05.0
      44: -10.0   75: +05.5
      45: -09.5   76: +06.0
      46: -09.0   77: +06.5
      47: -08.5   78: +07.0
      48: -08.0   79: +07.5
      49: -07.5   80: +08.0
      50: -07.0   81: +08.5
      51: -06.5   82: +09.0
      52: -06.0   83: +09.5
      53: -05.5   84: +10.0
      54: -05.0   85: +10.5
      55: -04.5   86: +11.0
      56: -04.0   87: +11.5
      57: -03.5   88: +12.0
      58: -03.0   89: +12.5
      59: -02.5   90: +13.0
      60: -02.0   91: +13.5
      61: -01.5   92: +14.0
      62: -01.0   93: +14.5
      63: -00.5   94: +15.0
      64: +00.0

*T02-3 :
      0: 1.00     10: 3.15     20: 11.2
      1: 1.12     11: 4.00     21: 12.5
      2: 1.25     12: 4.50     22: 14.0
      3: 1.40     13: 5.00     23: 16.0
      4: 1.60     14: 5.60     24: 18.0
      5: 1.80     15: 6.30     25: 20.0
      6: 2.00     16: 7.10
      7: 2.24     17: 8.00
      8: 2.50     18: 9.00
      9: 2.80     19: 10.0

*T03-1 : Fc Mod Source
      0: Filter EG 5: Velocity             10: MIDI2
      1: Amp EG    6: Short Ribbon (Pitch) 11: MIDI3
      2: Asgn EG   7: Short Ribbon (Mod)
      3: LFO1      8: KBD Track
      4: LFO2      9: MIDI1

*T03-2 : Virtual Patch 1~5 Source
      0: Filter EG 5: Velocity             10: MIDI2
      1: Amp EG    6: Short Ribbon (Pitch) 11: MIDI3
      2: Asng EG   7: Short Ribbon (Mod)   12: Long Ribbon (Filter)
      3: LFO1      8: KBD Track
```

4: LFO2 9: MIDI1

*T04-1 : Fx Type
0: No Effect
1: Compressor
2: Filter
3: Band EQ
4: Distortion
5: Decimator
6: Delay
7: L/C/R Delay
8: Auto Pan Delay
9: Mod Delay
10: Tape Echo
11: Chorus
12: Flanger
13: Vibrato
14: Phaser
15: Tremolo
16: Ring Mod
17: Grain Shifter

*T04-2 :
Refer EFFECT PARAMETER STRUCTURE

*T05-1 : Arp Resolution

0: 1/32	3: 1/12	6: 1/4
1: 1/24	4: 1/8	7: 1/2
2: 1/16	5: 1/6	8: 1/1

*T05-2 : Arp Type
0: Up
1: Down
2: Alt1
3: Alt2
4: Random
5: Trigger

*T05-3 : Arp Swing

14: -100,	34: -060,	54: -020,	74: +020,	94: +060,	114: +100
15: -098,	35: -058,	55: -018,	75: +022,	95: +062,	
16: -096,	36: -056,	56: -016,	76: +024,	96: +064,	
17: -094,	37: -054,	57: -014,	77: +026,	97: +066,	
18: -092,	38: -052,	58: -012,	78: +028,	98: +068,	
19: -090,	39: -050,	59: -010,	79: +030,	99: +070,	
20: -088,	40: -048,	60: -008,	80: +032,	100: +072,	
21: -086,	41: -046,	61: -006,	81: +034,	101: +074,	
22: -084,	42: -044,	62: -004,	82: +036,	102: +076,	
23: -082,	43: -042,	63: -002,	83: +038,	103: +078,	

24: -080,	44: -040,	64: +000,	84: +040,	104: +080,
25: -078,	45: -038,	65: +002,	85: +042,	105: +082,
26: -076,	46: -036,	66: +004,	86: +044,	106: +084,
27: -074,	47: -034,	67: +006,	87: +046,	107: +086,
28: -072,	48: -032,	68: +008,	88: +048,	108: +088,
29: -070,	49: -030,	69: +010,	89: +050,	109: +090,
30: -068,	50: -028,	70: +012,	90: +052,	110: +092,
31: -066,	51: -026,	71: +014,	91: +054,	111: +094,
32: -064,	52: -024,	72: +016,	92: +056,	112: +096,
33: -062,	53: -022,	73: +018,	93: +058,	113: +098,

*T06-1 :

0: Saw	4: Formant
1: Pulse	5: Noise
2: Tri	6: PCM/DWGS
3: Sin(Cross)	7: Audio In

*T06-2 : [kHz]

0: 0.01	16: 0.17	32: 0.83	48: 2.75	64: 4.75
80: 8.50	96: 15.0	112: 39.0		
1: 0.02	17: 0.18	33: 0.92	49: 2.88	65: 4.88
81: 8.75	97: 16.0	113: 41.0		
2: 0.03	18: 0.19	34: 1.00	50: 3.00	66: 5.00
82: 9.00	98: 17.0	114: 44.0		
3: 0.04	19: 0.20	35: 1.13	51: 3.13	67: 5.25
83: 9.25	99: 18.0	115: 47.0		
4: 0.05	20: 0.21	36: 1.25	52: 3.25	68: 5.50
84: 9.50	100: 19.0	116: 50.0		
5: 0.06	21: 0.22	37: 1.38	53: 3.38	69: 5.75
85: 9.75	101: 20.0	117: 53.0		
6: 0.07	22: 0.23	38: 1.50	54: 3.50	70: 6.00
86: 10.0	102: 21.5	118: 57.0		
7: 0.08	23: 0.24	39: 1.63	55: 3.63	71: 6.25
87: 10.5	103: 23.0	119: 61.0		
8: 0.09	24: 0.25	40: 1.75	56: 3.75	72: 6.50
88: 11.0	104: 24.5	120: 65.0		
9: 0.10	25: 0.29	41: 1.88	57: 3.88	73: 6.75
89: 11.5	105: 26.0	121: 70.0		
10: 0.11	26: 0.33	42: 2.00	58: 4.00	74: 7.00
90: 12.0	106: 27.5	122: 75.0		
11: 0.12	27: 0.42	43: 2.13	59: 4.13	75: 7.25
91: 12.5	107: 29.0	123: 80.0		
12: 0.13	28: 0.50	44: 2.25	60: 4.25	76: 7.50
92: 13.0	108: 31.0	124: 85.0		
13: 0.14	29: 0.58	45: 2.38	61: 4.38	77: 7.75
93: 13.5	109: 33.0	125: 90.0		
14: 0.15	30: 0.67	46: 2.50	62: 4.50	78: 8.00
94: 14.0	110: 35.0	126: 95.0		
15: 0.16	31: 0.75	47: 2.63	63: 4.63	79: 8.25
95: 14.5	111: 37.0	127: 100		

*T06-3 :

0: 8/1	4: 3/4	8: 1/4	12: 1/12	16: 1/64
1: 4/1	5: 1/2	9: 3/16	13: 1/16	
2: 2/1	6: 3/8	10: 1/6	14: 1/24	
3: 1/1	7: 1/3	11: 1/8	15: 1/32	

*T06-4 : Virtual Patch 1~5 Destination

0: Pitch	10: Drive/WS Depth	20: Filt2 EG1
30: Assignable EG Attack		
1: OSC2 Tune	11: Amp Level	21: Filt2 KBD Track
31: Assignable EG Decay		
2: OSC1 CTRL1	12: Panpot	22: Filter EG Attack
32: Assignable EG Sustain		
3: OSC1 Level	13: LFO1 Freq.	23: Filter EG Decay
33: Assignable EG Release		
4: OSC2 Level	14: LFO2 Freq.	24: Filter EG Sustain
34: Virtual Patch 1 Int.		
5: Noise Level	15: Portamento	25: Filter EG Release
35: Virtual Patch 2 Int.		
6: Filt1 Balance	16: OSC1 CTRL2	26: Amp EG Attack
36: Virtual Patch 3 Int.		
7: Filt1 Cutoff	17: Filt1 EG1	27: Amp EG Decay
37: Virtual Patch 4 Int.		
8: Filt1 Resonance	18: Filt1 KBD Track	28: Amp EG Sustain
38: Virtual Patch 5 Int.		
9: Filt2 Cutoff	19: Filt2 Resonance	29: Amp EG Release
39: LongRibbon(Filter)Int.		

*T06-5 : WaveShape Type

0: Off	5: Multi Tri	10: SubOSC Sin
1: Drive	6: Multi Sin	11: LevelBoost
2: Decimator	7: SubOSC Saw	
3: Hard Clip	8: SubOSC Squ	
4: Oct Saw	9: SubOSC Tri	

*T06-6 : Vinrato Int.

0: -2400,	16: +1200	32: -0800,	48: -0160,	64: +0000,	80: +0160,	96: +0800, 112: +1200,
1: -2400,	17: -1175,	33: -0775,	49: -0120,	65: +0001,	81: +0200,	97: +0825, 113: +1280,
2: -2320,	18: -1150,	34: -0750,	50: -0100,	66: +0002,	82: +0260,	98: +0850, 114: +1360,
3: -2240,	19: -1125,	35: -0725,	51: -0080,	67: +0003,	83: +0320,	99: +0875, 115: +1440,
4: -2160,	20: -1100,	36: -0700,	52: -0060,	68: +0004,	84: +0380,	100: +0900, 116: +1520,
5: -2080,	21: -1075,	37: -0675,	53: -0040,	69: +0005,	85: +0440,	101: +0925, 117: +1600,
6: -2000,	22: -1050,	38: -0650,	54: -0030,	70: +0010,		

86: +0500, 102: +0950, 118: +1680,
7: -1920, 23: -1025, 39: -0625, 55: -0025, 71: +0015,
87: +0550, 103: +0975, 119: +1760,
8: -1840, 24: -1000, 40: -0600, 56: -0020, 72: +0020,
88: +0600, 104: +1000, 120: +1840,
9: -1760, 25: -0975, 41: -0550, 57: -0015, 73: +0025,
89: +0625, 105: +1025, 121: +1920,
10: -1680, 26: -0950, 42: -0500, 58: -0010, 74: +0030,
90: +0650, 106: +1050, 122: +2000,
11: -1600, 27: -0925, 43: -0440, 59: -0005, 75: +0040,
91: +0675, 107: +1075, 123: +2080,
12: -1520, 28: -0900, 44: -0380, 60: -0004, 76: +0060,
92: +0700, 108: +1100, 124: +2160,
13: -1440, 29: -0875, 45: -0320, 61: -0003, 77: +0080,
93: +0725, 109: +1125, 125: +2240,
14: -1360, 30: -0850, 46: -0260, 62: -0002, 78: +0100,
94: +0750, 110: +1150, 126: +2320,
15: -1280, 31: -0825, 47: -0200, 63: -0001, 79: +0120,
95: +0775, 111: +1175, 127: +2400

*T06-7 : Filter Keyboard Track
0: -2.00, 16: -1.00, 32: -0.66, 48: -0.33, 64: +0.00,
80: +0.33, 96: +0.66, 112: +1.00,
1: -2.00, 17: -0.97, 33: -0.64, 49: -0.31, 65: +0.02,
81: +0.35, 97: +0.68, 113: +1.06,
2: -1.93, 18: -0.95, 34: -0.62, 50: -0.29, 66: +0.04,
82: +0.37, 98: +0.70, 114: +1.13,
3: -1.86, 19: -0.93, 35: -0.60, 51: -0.27, 67: +0.06,
83: +0.39, 99: +0.72, 115: +1.20,
4: -1.80, 20: -0.91, 36: -0.58, 52: -0.25, 68: +0.08,
84: +0.41, 100: +0.75, 116: +1.26,
5: -1.73, 21: -0.89, 37: -0.56, 53: -0.22, 69: +0.10,
85: +0.43, 101: +0.77, 117: +1.33,
6: -1.66, 22: -0.87, 38: -0.54, 54: -0.20, 70: +0.12,
86: +0.45, 102: +0.79, 118: +1.40,
7: -1.60, 23: -0.85, 39: -0.52, 55: -0.18, 71: +0.14,
87: +0.47, 103: +0.81, 119: +1.46,
8: -1.53, 24: -0.83, 40: -0.50, 56: -0.16, 72: +0.16,
88: +0.50, 104: +0.83, 120: +1.53,
9: -1.46, 25: -0.81, 41: -0.47, 57: -0.14, 73: +0.18,
89: +0.52, 105: +0.85, 121: +1.60,
10: -1.40, 26: -0.79, 42: -0.45, 58: -0.12, 74: +0.20,
90: +0.54, 106: +0.87, 122: +1.66,
11: -1.33, 27: -0.77, 43: -0.43, 59: -0.10, 75: +0.22,
91: +0.56, 107: +0.89, 123: +1.73,
12: -1.26, 28: -0.75, 44: -0.41, 60: -0.08, 76: +0.25,
92: +0.58, 108: +0.91, 124: +1.80,
13: -1.20, 29: -0.72, 45: -0.39, 61: -0.06, 77: +0.27,
93: +0.60, 109: +0.93, 125: +1.86,
14: -1.13, 30: -0.70, 46: -0.37, 62: -0.04, 78: +0.29,

94: +0.62, 110: +0.95, 126: +1.93,
15: -1.06, 31: -0.68, 47: -0.35, 63: -0.02, 79: +0.31,
95: +0.64, 111: +0.97, 127: +2.00

*T07-1 :

0: P.Bend
1: A.Touch
2~97: #CC 000~095
98~115: #CC 102~119
116: #CC16+/-
117: #CC17+/-
118: #CC19+/-
119: #CC20+/-
120: #CC21+/-

*T07-2 :

[+00]: Portamento
[+01]: Unison SW
[+02]: OSC1 Wave
[+03]: OSC1 Mod.
[+04]: OSC1 Ctrl1
[+05]: OSC1 Ctrl2
[+06]: OSC2 Wave
[+07]: OSC2 Mod.
[+08]: OSC2 Semitone
[+09]: OSC2 Tune
[+10]: OSC1 Level
[+11]: OSC2 Level
[+12]: Noise Level
[+13]: Filter Routing
[+14]: Filter1 Type Balance
[+15]: Filter1 Cutoff
[+16]: Filter1 Resonance
[+17]: Filter1 EG1 Int.
[+18]: Filter1 KBD Track
[+19]: Filter2 Type
[+20]: Filter2 Cutoff
[+21]: Filter2 Resonance
[+22]: Filter2 EG1 Int.
[+23]: Filter2 KBD Track
[+24]: Amp Level
[+25]: Panpot
[+29]: Filter EG Sustain
[+30]: EG1 Release
[+31]: Amp EG Attack
[+32]: Amp EG Decay
[+33]: Amp EG Sustain
[+34]: Amp EG Release
[+35]: LFO1 Wave
[+36]: LFO1 Frequency
[+37]: LFO2 Wave
[+38]: LFO2 Frequency
[+39]: Virtual Patch 1 Int.
[+40]: Virtual Patch 2 Int.
[+41]: Virtual Patch 3 Int.
[+42]: Virtual Patch 4 Int.
[+43]: Virtual Patch 5 Int.
[+44]: Long Ribbon "FILTER"
[+45]: Long Ribbon "FILTER" Int.
[+46]: EQ Hi.Gain
[+47]: EQ Low.Gain
[+48]: FX1 Dry/Wet
[+49]: FX1 Long Ribbon "FILTER" Control
[+50]: FX2 Dry/Wet
[+51]: FX2 Long Ribbon "FILTER" Control
[+52]: Vcd Threshold
[+53]: Vcd HPF Level
[+54]: Vcd HPF Gate
[+58]: Vcd Level
[+59]: Vcd Formant Shift
[+60]: Vcd FC Offset
[+61]: Vcd Resonance
[+62]: Vcd Fc Mod.Int.
[+63]: Vcd E.F. Sens

```
   [+26]: Drive/WS Depth        [+55]: Vcd Direct Level
   [+27]: Filter EG Attack      [+56]: Vcd In Src1 Level
   [+28]: Filter EG Decay       [+57]: Vcd In Src2 Level
```

EFFECT PARAMETER STRUCTURE

1 Compressor

```
+-----------+----------------------
+-------------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-------------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +1      | Envelope Select      | 0,1=LR Mix,LR Indv.
| +01          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +2      | Sensitivity          | 1~127=1~127
| +02          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +3      | Attack               | 0~127=0.1~500 msec
*T08-01 | +03          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +4      | Output Level         | 0~127=0~127
| +04          |
+-----------+----------------------
+-------------------------------------+--------------+
```

2 Filter

```
+-----------+----------------------
+-------------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-------------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +1      | Filter Type          | 0~4=LPF24,LPF18,LPF12,HPF12,BPF12
```

```
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Cutoff               | 0~127=0~127
| +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | Resonance            | 0~127=0~127
| +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | Trim                 | 0~127=0~127
| +04          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | Mod Source           | 0,1=LFO,Ctrl
| +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | Mod Intensity        | 64+/-63=-63~+63
| +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | Mod Response         | 0~127=0~127
| +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | LFO Tempo Sync       | 0,1=Off,On
| +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +09          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +10     | LFO Sync Note        | 0~16=8/1~1/64
*T08-03 | +10          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +11     | LFO Waveform         | 0~4=Saw,Squ,Tri,Sine,S&H
| +11          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +12     | LFO Shape            | 64+/-63=-63~+63
| +12          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +13     | LFO Key Sync         | 0,1=Off,On
| +13          |
+-----------+----------------------
```

```
+-------------------------------------+--------------+
|   +14     | LFO Init Phase       | 0~18=0,10,20~180 [degree]
| +14          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +15     | Control Source       | 0~6=Off~MIDI3
*T08-04 | +15          |
+-----------+----------------------
+-------------------------------------+--------------+
```

3   Band EQ

```
+-----------+----------------------
+-------------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-------------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +1      | Trim                 | 0~127=0~127
| +01          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +2      | B1 Type              | 0,1=Peaking,Shelv Low
| +02          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +3      | B1 Frequency         | 0~58=20~20 kHz
*T08-05 | +03          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +4      | B1 Q                 | 0~95=0.5,0.6~9.9,10
| +04          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +5      | B1 Gain              | 64+/-36=-18,-17.5~0~17.5,18 dB
| +05          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +6      | B2 Frequency         | 0~58=20~20 kHz
*T08-05 | +06          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +7      | B2 Q                 | 0~95=0.5,0.6~9.9,10
| +07          |
+-----------+----------------------
+-------------------------------------+--------------+
```

```
|   +8      | B2 Gain              | 64+/-36=-18,-17.5~0~17.5,18 dB
| +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | B3 Frequency         | 0~58=20~20 kHz
*T08-05 | +09          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +10     | B3 Q                 | 0~95=0.5,0.6~9.9,10
| +10          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +11     | B3 Gain              | 64+/-36=-18,-17.5~0~17.5,18 dB
| +11          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +12     | B4 Type              | 0,1=Peaking,Shelv Hi
| +12          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +13     | B4 Frequency         | 0~58=20~20 kHz
*T08-05 | +13          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +14     | B4 Q                 | 0~95=0.5,0.6~9.9,10
| +14          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +15     | B4 Gain              | 64+/-36=-18,-17.5~0~17.5,18 dB
| +15          |
+-----------+----------------------
+-----------------------------------+--------------+
```

```
4   Distortion
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | Gain                 | 0~127=0~127
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Pre EQ Frequency     | 0~58=20~20 kHz
```

*T08-05 | +02 |
+----------+----------
+----------+----------+
| +3 | Pre EQ Q | 0~95=0.5,0.6~9.9,10
| +03 |
+----------+----------
+----------+----------+
| +4 | Pre EQ Gain | 64+/-36=-18,-17.5~0~17.5,18 dB
| +04 |
+----------+----------
+----------+----------+
| +5 | B1 Frequency | 0~58=20~20 kHz
*T08-05 | +05 |
+----------+----------
+----------+----------+
| +6 | B1 Q | 0~95=0.5,0.6~9.9,10
| +06 |
+----------+----------
+----------+----------+
| +7 | B1 Gain | 64+/-36=-18,-17.5~0~17.5,18 dB
| +07 |
+----------+----------
+----------+----------+
| +8 | B2 Frequency | 0~58=20~20 kHz
*T08-05 | +08 |
+----------+----------
+----------+----------+
| +9 | B2 Q | 0~95=0.5,0.6~9.9,10
| +09 |
+----------+----------
+----------+----------+
| +10 | B2 Gain | 64+/-36=-18,-17.5~0~17.5,18 dB
| +10 |
+----------+----------
+----------+----------+
| +11 | B3 Frequency | 0~58=20~20 kHz
*T08-05 | +11 |
+----------+----------
+----------+----------+
| +12 | B3 Q | 0~95=0.5,0.6~9.9,10
| +12 |
+----------+----------
+----------+----------+
| +13 | B3 Gain | 64+/-36=-18,-17.5~0~17.5,18 dB
| +13 |
+----------+----------
+----------+----------+
| +14 | Output Level | 0~127=0~127
| +14 |
+----------+----------

```
+-----------------------------------+--------------+


5   Decimator
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | PreLPF               | 0,1=Off,On
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | HighDamp             | 0~100=0~100 %
| +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | Fs                   | 0~94=1.0,1.5,~47.5,48.0 kHz
| +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | Bit                  | 0~20=4~24
| +04          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | Output Level         | 0~127=0~127
| +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | Fs Mod Intensity     | 64+/-63=-63~+63
| +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | LFO Tempo Sync       | 0,1=Off,On
| +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | LFO Sync Note        | 0~16=8/1~1/64
*T08-03 | +09          |
+-----------+----------------------
+-----------------------------------+--------------+
```

```
|   +10     | LFO Waveform         | 0~4=Saw,Squ,Tri,Sine,S&H
| +10          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +11     | LFO Shape            | 64+/-63=-63~+63
| +11          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +12     | LFO Key Sync         | 0,1=Off,On
| +12          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +13     | LFO Init Phase       | 0~18=0,10,20~180 [degree]
| +13          |
+-----------+----------------------
+-----------------------------------+--------------+
```

6   Delay

```
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | Type                 | 0,1=Stereo,Cross
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Delay Tempo Sync     | 0,1=Off,On
| +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | Time Ratio (Sync=Off)| 0~127=0.5~400%
*T08-06 | +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | L Delay Time         | 0~127=0~1400 msec
*T08-08 | +04          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | R Delay Time         | 0~127=0~1400 msec
*T08-08 | +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | Time Ratio (Sync=On) | 0~14=12.5~400%
```

```
*T08-07 | +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | L Delay Time         | 0~13=1/64~1/1
*T08-09 | +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | R Delay Time         | 0~13=1/64~1/1
*T08-09 | +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | Feedback             | 0~127=0~127
| +09          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +10     | High Damp            | 0~100=0~100 %
| +10          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +11     | Trim                 | 0~127=0~127
| +11          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +12     | Spread               | 0~127=0~127
| +12          |
+-----------+----------------------
+-----------------------------------+--------------+
```

7   L/C/R Delay

```
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | Delay Tempo Sync     | 0,1=Off,On
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Time Ratio (Sync=Off)| 0~127=0.5~400%
*T08-06 | +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | L Delay Time         | 0~127=0~1400 msec
*T08-08 | +03          |
```

```
+-----------+----------------------
+-------------------------------------+--------------+
|   +4      | C Delay Time         | 0~127=0~1400 msec
*T08-08 | +04          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +5      | R Delay Time         | 0~127=0~1400 msec
*T08-08 | +05          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +6      | Time Ratio (Sync=On) | 0~14=12.5~400%
*T08-07 | +06          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +7      | L Delay Time         | 0~13=1/64~1/1
*T08-09 | +07          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +8      | C Delay Time         | 0~13=1/64~1/1
*T08-09 | +08          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +9      | R Delay Time         | 0~13=1/64~1/1
*T08-09 | +09          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +10     | L Delay Level        | 0~127=0~127
| +10          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +11     | C Delay Level        | 0~127=0~127
| +11          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +12     | R Delay Level        | 0~127=0~127
| +12          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +13     | C Feedback           | 0~127=0~127
| +13          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +14     | Trim                 | 0~127=0~127
| +14          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +15     | Spread               | 0~127=0~127
| +15          |
+-----------+----------------------
+-------------------------------------+--------------+
```

8 Auto Panning Delay

No. SubID Offset	PARAMETER	VALUE	DESCRIPTION
+0 +00	Dry/Wet	0,1~99,100=Dry,99:1 ~ 1:99,Wet	
+1 +01	Delay Tempo Sync	0,1=Off,On	
+2 *T08-06 +02	Time Ratio (Sync=Off)	0~127=0.5~400%	
+3 *T08-08 +03	L Delay Time	0~127=0~1400 msec	
+4 *T08-08 +04	R Delay Time	0~127=0~1400 msec	
+5 *T08-07 +05	Time Ratio (Sync=On)	0~14=12.5~400%	
+6 *T08-09 +06	L Delay Time	0~13=1/64~1/1	
+7 *T08-09 +07	R Delay Time	0~13=1/64~1/1	
+8 +08	FeedBack	0~127=0~127	
+9 +09	Mod Depth	0~127=0~127	
+10	LFO Tempo Sync	0,1=Off,On	

| +10 |
+----------+----------
+----------+----------+
| +11 | LFO Frequency | 0~127=0.01~100.0 Hz
*T08-02 | +11 |
+----------+----------
+----------+----------+
| +12 | LFO Sync Note | 0~16=8/1~1/64
*T08-03 | +12 |
+----------+----------
+----------+----------+
| +13 | LFO Waveform | 0~4=Saw,Squ,Tri,Sine,S&H
| +13 |
+----------+----------
+----------+----------+
| +14 | LFO Shape | 64+/-63=-63~+63
| +14 |
+----------+----------
+----------+----------+
| +15 | LFO Key Sync | 0,1=Off,On
| +15 |
+----------+----------
+----------+----------+
| +16 | LFO Init Phase | 0~18=0,10,20~180 [degree]
| +16 |
+----------+----------
+----------+----------+
| +17 | LFO Spread | 64+/-18=-180~180 [degree]
| +17 |
+----------+----------
+----------+----------+
| +18 | High Damp | 0~100=0~100 %
| +18 |
+----------+----------
+----------+----------+
| +19 | Trim | 0~127=0~127
| +19 |
+----------+----------
+----------+----------+

9 Modulation Delay
+----------+----------
+----------+----------+
| No. | PARAMETER | VALUE DESCRIPTION
| SubID Offset |
+----------+----------
+----------+----------+
| +0 | Dry/Wet | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00 |

```
+-----------+----------------------
+-------------------------------------+--------------+
|   +1      | Delay Tempo Sync     | 0,1=Off,On
| +01          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +2      | Time Ratio (Sync=Off)| 0~127=0.5~400%
*T08-06 | +02          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +3      | L Delay Time         | 0~127=0~1400 msec
*T08-08 | +03          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +4      | R Delay Time         | 0~127=0~1400 msec
*T08-08 | +04          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +5      | Time Ratio (Sync=On) | 0~14=12.5~400%
*T08-07 | +05          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +6      | L Delay Time         | 0~13=1/64~1/1
*T08-09 | +06          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +7      | R Delay Time         | 0~13=1/64~1/1
*T08-09 | +07          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +8      | FeedBack             | 0~127=0~127
| +08          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +9      | Mod Depth            | 0~127=0~127
| +09          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +10     | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +10          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +11     | LFO Spread           | 64+/-18=-180~180 [degree]
| +11          |
+-----------+----------------------
+-------------------------------------+--------------+


10  Tape Echo
+-----------+----------------------
```

```
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | Delay Tempo Sync     | 0,1=Off,On
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Time Ratio (Sync=Off)| 0~127=0.5~400%
*T08-06 | +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | Tap1 Delay Time      | 0~127=0~1400 msec
*T08-08 | +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | Tap2 Delay Time      | 0~127=0~1400 msec
*T08-08 | +04          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | Time Ratio (Sync=On) | 0~14=12.5~400%
*T08-07 | +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | Tap1 Delay Time      | 0~13=1/64~1/1
*T08-09 | +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | Tap2 Delay Time      | 0~13=1/64~1/1
*T08-09 | +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | Tap1 Level           | 0~127=0~127
| +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | Tap2 Level           | 0~127=0~127
| +09          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +10     | FeedBack             | 0~127=0~127
| +10          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +11     | High Damp            | 0~100=0~100 %
```

```
| +11          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +12     | Low Damp             | 0~100=0~100 %
| +12          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +13     | Trim                 | 0~127=0~127
| +13          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +14     | Saturation           | 0~127=0~127
| +14          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +15     | Wow Flutter Freq     | 0~127=0.01~100.0 Hz
*T08-02 | +15          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +16     | Wow Flutter Depth    | 0~127=0~127
| +16          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +17     | Pre Tone             | 0~127=0~127
| +17          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +18     | Spread               | 0~127=0~127
| +18          |
+-----------+----------------------
+-----------------------------------+--------------+


11  Chorus
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | Mod Depth            | 0~127=0~127
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +02          |
```

```
+-----------+----------------------
+-------------------------------------+--------------+
|   +3      | LFO Spread           | 64+/-18=-180~180 [degree]
| +03          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +4      | PreDelay L           | 0~119=0~50 msec
*T08-10 | +04          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +5      | PreDelay R           | 0~119=0~50 msec
*T08-10 | +05          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +6      | Trim                 | 0~127=0~127
| +06          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +7      | High EQ Gain         | 64+/-30=-15~+15 dB
| +07          |
+-----------+----------------------
+-------------------------------------+--------------+
```

12 Flanger

```
+-----------+----------------------
+-------------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-------------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +1      | Delay                | 0~113=0~30 msec
*T08-11 | +01          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +2      | Mod Depth            | 0~127=0~127
| +02          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +3      | Feedback             | 0~127=0~127
| +03          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +4      | Phase                | 0,1=+,-
| +04          |
+-----------+----------------------
```

```
+-------------------------------------+--------------+
|   +5      | LFO Tempo Sync       | 0,1=Off,On
| +05          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +6      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +06          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +7      | LFO Sync Note        | 0~16=8/1~1/64
*T08-03 | +07          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +8      | LFO Waveform         | 0~4=Saw,Squ,Tri,Sine,S&H
| +08          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +9      | LFO Shape            | 64+/-63=-63~+63
| +09          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +10     | LFO Key Sync         | 0,1=Off,On
| +10          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +11     | LFO Init Phase       | 0~18=0,10,20~180 [degree]
| +11          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +12     | LFO Spread           | 64+/-18=-180~180 [degree]
| +12          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +13     | High Damp            | 0~100=0~100 %
| +13          |
+-----------+----------------------
+-------------------------------------+--------------+


13  Vibrato
+-----------+----------------------
+-------------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-------------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-------------------------------------+--------------+
```

```
|   +1      | Mod Depth            | 0~127=0~127
| +01          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +2      | LFO Tempo Sync       | 0,1=Off,On
| +02          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +3      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +03          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +4      | LFO Sync Note        | 0~16=8/1~1/64
*T08-03 | +04          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +5      | LFO Waveform         | 0~4=Saw,Squ,Tri,Sine,S&H
| +05          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +6      | LFO Shape            | 64+/-63=-63~+63
| +06          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +7      | LFO Key Sync         | 0,1=Off,On
| +07          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +8      | LFO Init Phase       | 0~18=0,10,20~180 [degree]
| +08          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +9      | LFO Spread           | 64+/-18=-180~180 [degree]
| +09          |
+-----------+----------------------
+-------------------------------------+--------------+


14  Phaser
+-----------+----------------------
+-------------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-------------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-------------------------------------+--------------+
|   +1      | Type                 | 0,1=Blue,U-VB
```

```
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Manual               | 0~127=0~127
| +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | Mod Depth            | 0~127=0~127
| +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | Resonance            | 0~127=0~127
| +04          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | Phase                | 0,1=+,-
| +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | LFO Tempo Sync       | 0,1=Off,On
| +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | LFO Sync Note        | 0~16=8/1~1/64
*T08-03 | +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | LFO Waveform         | 0~4=Saw,Squ,Tri,Sine,S&H
| +09          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +10     | LFO Shape            | 64+/-63=-63~+63
| +10          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +11     | LFO Key Sync         | 0,1=Off,On
| +11          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +12     | LFO Init Phase       | 0~18=0,10,20~180 [degree]
| +12          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +13     | LFO Spread           | 64+/-18=-180~180 [degree]
| +13          |
+-----------+----------------------
```

```
+-----------------------------------+--------------+
|   +14     | High Damp             | 0~100=0~100 %
| +14          |
+-----------+----------------------
+-----------------------------------+--------------+
```

15 Tremolo

```
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER          |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet               | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | Mod Depth             | 0~127=0~127
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | LFO Tempo Sync        | 0,1=Off,On
| +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | LFO Frequency         | 0~127=0.01~100.0 Hz
*T08-02 | +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | LFO Sync Note         | 0~16=8/1~1/64
*T08-03 | +04          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | LFO Waveform          | 0~4=Saw,Squ,Tri,Sine,S&H
| +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | LFO Shape             | 64+/-63=-63~+63
| +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | LFO Key Sync          | 0,1=Off,On
| +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | LFO Init Phase        | 0~18=0,10,20~180 [degree]
| +08          |
+-----------+----------------------
+-----------------------------------+--------------+
```

```
|   +9      | LFO Spread           | 64+/-18=-180~180 [degree]
| +09          |
+-----------+----------------------
+-----------------------------------+--------------+


16  Ring Modulator
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | OSC Mode             | 0,1=Fixed,Note
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Frequency            | 0~127=0~12.0 kHz
*T08-12 | +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | Offset               | 64+/-48=-48~+48
| +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | Fine                 | 64+/-50=-100,-98~0~98,100 cent
| +04          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | OSC Waveform         | 0~2=Saw,Tri,Sine
| +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | LFO Intensity        | 64+/-63=-63~+63
| +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | LFO Tempo Sync       | 0,1=Off,On
| +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | LFO Sync Note        | 0~16=8/1~1/64
```

```
*T08-03 | +09          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +10     | LFO Waveform         | 0~4=Saw,Squ,Tri,Sine,S&H
| +10          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +11     | LFO Shape            | 64+/-63=-63~+63
| +11          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +12     | LFO Key Sync         | 0,1=Off,On
| +12          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +13     | LFO Init Phase       | 0~18=0,10,20~180 [degree]
| +13          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +14     | Pre LPF              | 0~127=0~127
| +14          |
+-----------+----------------------
+-----------------------------------+--------------+


17  Grain Shifter
+-----------+----------------------
+-----------------------------------+--------------+
|  No.      |    PARAMETER         |  VALUE        DESCRIPTION
| SubID Offset |
+-----------+----------------------
+-----------------------------------+--------------+
|   +0      | Dry/Wet              | 0,1~99,100=Dry,99:1 ~ 1:99,Wet
| +00          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +1      | Duration Temp oSync  | 0,1=Off,On
| +01          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +2      | Time Ratio (Sync=Off)| 0~127=0.5~400%
*T08-06 | +02          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +3      | Duration             | 0~127=0~350 msec
*T08-13 | +03          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +4      | Time Ratio (Sync=On) | 0~14=12.5~400%
*T08-07 | +04          |
```

```
+-----------+----------------------
+-----------------------------------+--------------+
|   +5      | Duration             | 0~13=1/64~1/1
*T08-09 | +05          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +6      | LFO Tempo Sync       | 0,1=Off,On
| +06          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +7      | LFO Frequency        | 0~127=0.01~100.0 Hz
*T08-02 | +07          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +8      | LFO Sync Note        | 0~16=8/1~1/64
*T08-03 | +08          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +9      | LFO Key Sync         | 0,1=Off,On
| +09          |
+-----------+----------------------
+-----------------------------------+--------------+
|   +10     | LFO Init Phase       | 0~18=0,10,20~180 [degree]
| +10          |
+-----------+----------------------
+-----------------------------------+--------------+
```

```
 *T08-01 : Compressor Attack [msec]
        0: 0.1      16: 1.7      32: 4.7     48: 10.5     64: 23.0
80: 50.0     96: 110    112: 240
        1: 0.2      17: 1.8      33: 5.0     49: 11.0     65: 24.0
81: 53.0     97: 115    113: 252
        2: 0.3      18: 1.9      34: 5.3     50: 11.5     66: 25.0
82: 55.0     98: 121    114: 265
        3: 0.4      19: 2.0      35: 5.6     51: 12.0     67: 27.0
83: 58.0     99: 127    115: 278
        4: 0.5      20: 2.2      36: 5.9     52: 12.5     68: 28.0
84: 61.0    100: 133    116: 292
        5: 0.6      21: 2.4      37: 6.2     53: 13.0     69: 29.0
85: 64.0    101: 140    117: 307
        6: 0.7      22: 2.6      38: 6.5     54: 13.5     70: 31.0
86: 68.0    102: 147    118: 322
        7: 0.8      23: 2.8      39: 6.8     55: 14.0     71: 32.0
87: 71.0    103: 155    119: 338
        8: 0.9      24: 3.0      40: 7.1     56: 15.0     72: 34.0
88: 75.0    104: 162    120: 355
        9: 1.0      25: 3.2      41: 7.4     57: 16.0     73: 36.0
89: 78.0    105: 170    121: 373
       10: 1.1      26: 3.4      42: 7.8     58: 17.0     74: 37.0
```

90: 82.0 106: 179 122: 391
11: 1.2 27: 3.6 43: 8.2 59: 18.0 75: 39.0
91: 86.0 107: 188 123: 411
12: 1.3 28: 3.8 44: 8.6 60: 19.0 76: 41.0
92: 91.0 108: 197 124: 432
13: 1.4 29: 4.0 45: 9.0 61: 20.0 77: 43.0
93: 95.0 109: 207 125: 453
14: 1.5 30: 4.2 46: 9.4 62: 21.0 78: 46.0
94: 99.0 110: 218 126: 476
15: 1.6 31: 4.4 47: 10.0 63: 22.0 79: 48.0
95: 104 111: 229 127: 500

*T08-02 : LFO Frequency [Hz]
0: 0.01 16: 0.17 32: 0.83 48: 2.75 64: 4.75
80: 8.50 96: 15.0 112: 39.0
1: 0.02 17: 0.18 33: 0.92 49: 2.88 65: 4.88
81: 8.75 97: 16.0 113: 41.0
2: 0.03 18: 0.19 34: 1.00 50: 3.00 66: 5.00
82: 9.00 98: 17.0 114: 44.0
3: 0.04 19: 0.20 35: 1.13 51: 3.13 67: 5.25
83: 9.25 99: 18.0 115: 47.0
4: 0.05 20: 0.21 36: 1.25 52: 3.25 68: 5.50
84: 9.50 100: 19.0 116: 50.0
5: 0.06 21: 0.22 37: 1.38 53: 3.38 69: 5.75
85: 9.75 101: 20.0 117: 53.0
6: 0.07 22: 0.23 38: 1.50 54: 3.50 70: 6.00
86: 10.0 102: 21.5 118: 57.0
7: 0.08 23: 0.24 39: 1.63 55: 3.63 71: 6.25
87: 10.5 103: 23.0 119: 61.0
8: 0.09 24: 0.25 40: 1.75 56: 3.75 72: 6.50
88: 11.0 104: 24.5 120: 65.0
9: 0.10 25: 0.29 41: 1.88 57: 3.88 73: 6.75
89: 11.5 105: 26.0 121: 70.0
10: 0.11 26: 0.33 42: 2.00 58: 4.00 74: 7.00
90: 12.0 106: 27.5 122: 75.0
11: 0.12 27: 0.42 43: 2.13 59: 4.13 75: 7.25
91: 12.5 107: 29.0 123: 80.0
12: 0.13 28: 0.50 44: 2.25 60: 4.25 76: 7.50
92: 13.0 108: 31.0 124: 85.0
13: 0.14 29: 0.58 45: 2.38 61: 4.38 77: 7.75
93: 13.5 109: 33.0 125: 90.0
14: 0.15 30: 0.67 46: 2.50 62: 4.50 78: 8.00
94: 14.0 110: 35.0 126: 95.0
15: 0.16 31: 0.75 47: 2.63 63: 4.63 79: 8.25
95: 14.5 111: 37.0 127: 100

*T08-03 : LFO Sync Note
0: 8/1 4: 3/4 8: 1/4 12: 1/12 16: 1/64
1: 4/1 5: 1/2 9: 3/16 13: 1/16
2: 2/1 6: 3/8 10: 1/6 14: 1/24

3: 1/1 7: 1/3 11: 1/8 15: 1/32

*T08-04 : Control Source
0: Off
1: Velocity
2: PitchBend
3: ModWheel
4: MIDI1
5: MIDI2
6: MIDI3

*T08-05 : Band Frequency [Hz]
0: 20 8: 50 16: 125 24: 315 32: 900 40: 2.24k 48: 6.30k 56: 16.0k
1: 22 9: 56 17: 140 25: 400 33: 1.0k 41: 2.50k 49: 7.10k 57: 18.0k
2: 25 10: 63 18: 160 26: 450 34: 1.12k 42: 2.80k 50: 8.00k 58: 20.0k
3: 28 11: 71 19: 180 27: 500 35: 1.25k 43: 3.15k 51: 9.00k
4: 32 12: 80 20: 200 28: 560 36: 1.4k 44: 4.00k 52: 10.0k
5: 36 13: 90 21: 224 29: 630 37: 1.6k 45: 4.50k 53: 11.2k
6: 40 14: 100 22: 250 30: 710 38: 1.8k 46: 5.00k 54: 12.5k
7: 45 15: 112 23: 280 31: 800 39: 2.0k 47: 5.60k 55: 14.0k

*T08-06 : Time Ratio [%] Sync=OFF
0: 0.5 16: 8.5 32: 23.0 48: 59.0 64: 100.0 80: 120.0 96: 158.0 112: 210.0
1: 1.0 17: 9.0 33: 25.0 49: 62.0 65: 100.0 81: 122.0 97: 161.0 113: 215.0
2: 1.5 18: 9.5 34: 28.0 50: 65.0 66: 101.0 82: 123.0 98: 164.0 114: 220.0
3: 2.0 19: 10.0 35: 30.0 51: 66.6 67: 102.0 83: 125.0 99: 167.0 115: 225.0
4: 2.5 20: 11.0 36: 32.0 52: 72.0 68: 103.0 84: 128.0 100: 170.0 116: 230.0
5: 3.0 21: 12.5 37: 33.3 53: 75.0 69: 104.0 85: 130.0 101: 173.0 117: 240.0
6: 3.5 22: 13.0 38: 36.0 54: 78.0 70: 105.0 86: 133.3 102: 176.0 118: 250.0
7: 4.0 23: 14.0 39: 38.0 55: 81.0 71: 106.0 87: 134.0 103: 179.0 119: 260.0
8: 4.5 24: 15.0 40: 40.0 56: 85.0 72: 107.0 88: 136.0 104: 182.0 120: 270.0
9: 5.0 25: 16.7 41: 42.0 57: 89.0 73: 108.0 89: 138.0 105: 185.0 121: 280.0

```
       10: 5.5      26: 17.0     42: 44.0     58: 92.0     74: 109.0
90: 140.0   106: 188.0   122: 300.0
       11: 6.0      27: 18.0     43: 46.0     59: 95.0     75: 110.0
91: 143.0   107: 191.0   123: 320.0
       12: 6.5      28: 19.0     44: 48.0     60: 98.0     76: 112.0
92: 146.0   108: 194.0   124: 340.0
       13: 7.0      29: 20.0     45: 50.0     61: 100.0    77: 114.0
93: 150.0   109: 197.0   125: 360.0
       14: 7.5      30: 21.0     46: 53.0     62: 100.0    78: 116.0
94: 152.0   110: 200.0   126: 380.0
       15: 8.0      31: 22.0     47: 56.0     63: 100.0    79: 118.0
95: 155.0   111: 205.0   127: 400.0

 *T08-07 : Time Ratio [%] Sync=ON
        0: 12.5      4: 50.0      8: 125.0    12: 250.0
        1: 16.7      5: 66.6      9: 133.0    13: 300.0
        2: 25.0      6: 75.0     10: 150.0    14: 400.0
        3: 33.3      7: 100.0    11: 200.0

 *T08-08 : DelayTime 0~1400 [msec]
        0: 0        16: 22       32: 90       48: 190      64: 350
80: 510      96: 780     112: 1100
        1: 1        17: 24       33: 95       49: 200      65: 360
81: 520      97: 800     113: 1120
        2: 2        18: 26       34: 100      50: 210      66: 370
82: 530      98: 820     114: 1140
        3: 3        19: 28       35: 105      51: 220      67: 380
83: 540      99: 840     115: 1160
        4: 4        20: 30       36: 110      52: 230      68: 390
84: 550     100: 860     116: 1180
        5: 5        21: 35       37: 115      53: 240      69: 400
85: 560     101: 880     117: 1200
        6: 6        22: 40       38: 120      54: 250      70: 410
86: 580     102: 900     118: 1220
        7: 7        23: 45       39: 125      55: 260      71: 420
87: 600     103: 920     119: 1240
        8: 8        24: 50       40: 130      56: 270      72: 430
88: 620     104: 940     120: 1260
        9: 9        25: 55       41: 135      57: 280      73: 440
89: 640     105: 960     121: 1280
       10: 10       26: 60       42: 140      58: 290      74: 450
90: 660     106: 980     122: 1300
       11: 12       27: 65       43: 145      59: 300      75: 460
91: 680     107: 1000    123: 1320
       12: 14       28: 70       44: 150      60: 310      76: 470
92: 700     108: 1020    124: 1340
       13: 16       29: 75       45: 160      61: 320      77: 480
93: 720     109: 1040    125: 1360
       14: 18       30: 80       46: 170      62: 330      78: 490
94: 740     110: 1060    126: 1380
```

15: 20 31: 85 47: 180 63: 340 79: 500
95: 760 111: 1080 127: 1400

*T08-09 : [TempoSync=ON] DelayTime (Grain Shifter Duration)

0: 1/64 6: 1/6 12: 3/4
1: 1/32 7: 3/16 13: 1/1
2: 1/24 8: 1/4
3: 1/16 9: 1/3
4: 1/12 10: 3/8
5: 1/8 11: 1/2

*T08-10 : Chorus DelayTime 0~50 [msec]

0: 0.0 16: 1.6 32: 4.4 48: 8.4 64: 14.0
80: 22.0 96: 30.0 112: 43.0
1: 0.1 17: 1.7 33: 4.6 49: 8.7 65: 14.5
81: 22.5 97: 30.5 113: 44.0
2: 0.2 18: 1.8 34: 4.8 50: 9.0 66: 15.0
82: 23.0 98: 31.0 114: 45.0
3: 0.3 19: 1.9 35: 5.0 51: 9.3 67: 15.5
83: 23.5 99: 31.5 115: 46.0
4: 0.4 20: 2.0 36: 5.2 52: 9.6 68: 16.0
84: 24.0 100: 32.0 116: 47.0
5: 0.5 21: 2.2 37: 5.4 53: 9.9 69: 16.5
85: 24.5 101: 32.5 117: 48.0
6: 0.6 22: 2.4 38: 5.6 54: 10.2 70: 17.0
86: 25.0 102: 33.0 118: 49.0
7: 0.7 23: 2.6 39: 5.8 55: 10.5 71: 17.5
87: 25.5 103: 34.0 119: 50.0
8: 0.8 24: 2.8 40: 6.0 56: 10.8 72: 18.0
88: 26.0 104: 35.0
9: 0.9 25: 3.0 41: 6.3 57: 11.1 73: 18.5
89: 26.5 105: 36.0
10: 1.0 26: 3.2 42: 6.6 58: 11.4 74: 19.0
90: 27.0 106: 37.0
11: 1.1 27: 3.4 43: 6.9 59: 11.7 75: 19.5
91: 27.5 107: 38.0
12: 1.2 28: 3.6 44: 7.2 60: 12.0 76: 20.0
92: 28.0 108: 39.0
13: 1.3 29: 3.8 45: 7.5 61: 12.5 77: 20.5
93: 28.5 109: 40.0
14: 1.4 30: 4.0 46: 7.8 62: 13.0 78: 21.0
94: 29.0 110: 41.0
15: 1.5 31: 4.2 47: 8.1 63: 13.5 79: 21.5
95: 29.5 111: 42.0

*T08-11 : Flanger DelayTime 0~30 [msec]

0: 0.0 16: 1.6 32: 3.2 48: 4.8 64: 6.8
80: 10.5 96: 15.3 112: 28.0
1: 0.1 17: 1.7 33: 3.3 49: 4.9 65: 7.0
81: 10.8 97: 15.6 113: 30.0

2: 0.2 18: 1.8 34: 3.4 50: 5.0 66: 7.2 82: 11.1 98: 15.9
3: 0.3 19: 1.9 35: 3.5 51: 5.1 67: 7.4 83: 11.4 99: 16.2
4: 0.4 20: 2.0 36: 3.6 52: 5.2 68: 7.6 84: 11.7 100: 16.5
5: 0.5 21: 2.1 37: 3.7 53: 5.3 69: 7.8 85: 12.0 101: 17.0
6: 0.6 22: 2.2 38: 3.8 54: 5.4 70: 8.0 86: 12.3 102: 17.5
7: 0.7 23: 2.3 39: 3.9 55: 5.5 71: 8.2 87: 12.6 103: 18.0
8: 0.8 24: 2.4 40: 4.0 56: 5.6 72: 8.4 88: 12.9 104: 18.5
9: 0.9 25: 2.5 41: 4.1 57: 5.7 73: 8.6 89: 13.2 105: 19.0
10: 1.0 26: 2.6 42: 4.2 58: 5.8 74: 8.8 90: 13.5 106: 19.5
11: 1.1 27: 2.7 43: 4.3 59: 5.9 75: 9.0 91: 13.8 107: 20.0
12: 1.2 28: 2.8 44: 4.4 60: 6.0 76: 9.3 92: 14.1 108: 21.0
13: 1.3 29: 2.9 45: 4.5 61: 6.2 77: 9.6 93: 14.4 109: 22.0
14: 1.4 30: 3.0 46: 4.6 62: 6.4 78: 9.9 94: 14.7 110: 24.0
15: 1.5 31: 3.1 47: 4.7 63: 6.6 79: 10.2 95: 15.0 111: 26.0

*T08-12 : Ring Modulator Frequency [kHz]

0: 0.000 16: 0.10 32: 0.37 48: 1.05 64: 2.00 80: 3.60 96: 5.80 112: 9.00
1: 0.002 17: 0.11 33: 0.39 49: 1.10 65: 2.10 81: 3.70 97: 6.00 113: 9.20
2: 0.004 18: 0.12 34: 0.41 50: 1.15 66: 2.20 82: 3.80 98: 6.20 114: 9.40
3: 0.006 19: 0.13 35: 0.43 51: 1.20 67: 2.30 83: 3.90 99: 6.40 115: 9.60
4: 0.008 20: 0.14 36: 0.45 52: 1.25 68: 2.40 84: 4.00 100: 6.60 116: 9.80
5: 0.010 21: 0.15 37: 0.50 53: 1.30 69: 2.50 85: 4.10 101: 6.80 117: 10.0
6: 0.015 22: 0.17 38: 0.55 54: 1.35 70: 2.60 86: 4.20 102: 7.00 118: 10.2
7: 0.020 23: 0.19 39: 0.60 55: 1.40 71: 2.70 87: 4.30 103: 7.20 119: 10.4
8: 0.025 24: 0.21 40: 0.65 56: 1.45 72: 2.80 88: 4.40 104: 7.40 120: 10.6
9: 0.03 25: 0.23 41: 0.70 57: 1.50 73: 2.90 89: 4.50 105: 7.60 121: 10.8

10: 0.04 26: 0.25 42: 0.75 58: 1.55 74: 3.00 90: 4.60 106: 7.80 122: 11.0
11: 0.05 27: 0.27 43: 0.80 59: 1.60 75: 3.10 91: 4.80 107: 8.00 123: 11.2
12: 0.06 28: 0.29 44: 0.85 60: 1.65 76: 3.20 92: 5.00 108: 8.20 124: 11.4
13: 0.07 29: 0.31 45: 0.90 61: 1.70 77: 3.30 93: 5.20 109: 8.40 125: 11.6
14: 0.08 30: 0.33 46: 0.95 62: 1.80 78: 3.40 94: 5.40 110: 8.60 126: 11.8
15: 0.09 31: 0.35 47: 1.00 63: 1.90 79: 3.50 95: 5.60 111: 8.80 127: 12.0

*T08-13 : Grain Shifter Duration 0~350 [msec]

0: 0 16: 16 32: 32 48: 48 64: 78 80: 110 96: 190 112: 270
1: 1 17: 17 33: 33 49: 49 65: 80 81: 115 97: 195 113: 275
2: 2 18: 18 34: 34 50: 50 66: 82 82: 120 98: 200 114: 280
3: 3 19: 19 35: 35 51: 52 67: 84 83: 125 99: 205 115: 285
4: 4 20: 20 36: 36 52: 54 68: 86 84: 130 100: 210 116: 290
5: 5 21: 21 37: 37 53: 56 69: 88 85: 135 101: 215 117: 295
6: 6 22: 22 38: 38 54: 58 70: 90 86: 140 102: 220 118: 300
7: 7 23: 23 39: 39 55: 60 71: 92 87: 145 103: 225 119: 305
8: 8 24: 24 40: 40 56: 62 72: 94 88: 150 104: 230 120: 310
9: 9 25: 25 41: 41 57: 64 73: 96 89: 155 105: 235 121: 315
10: 10 26: 26 42: 42 58: 66 74: 98 90: 160 106: 240 122: 320
11: 11 27: 27 43: 43 59: 68 75: 100 91: 165 107: 245 123: 325
12: 12 28: 28 44: 44 60: 70 76: 102 92: 170 108: 250 124: 330
13: 13 29: 29 45: 45 61: 72 77: 104 93: 175 109: 255 125: 335
14: 14 30: 30 46: 46 62: 74 78: 106 94: 180 110: 260 126: 340
15: 15 31: 31 47: 47 63: 76 79: 108 95: 185 111: 265 127: 350