R3

SYNTHESIZER/
VOCODER

Messages transmitted and received by the R3

KORG

Ⓔ ①

❑ MIDI channels

MIDI uses sixteen channels (1–16). MIDI messages can be transmitted and received when the channel of the receiving device matches the channel of the transmitting device.
This setting will affect the way in which channels are handled.

• If "Mode" is Single, Layer, or Split

1. If the Voice page "Mode" setting (knob [2]) is Single, Layer, or Split, MIDI data is transmitted / received on the global MIDI channel.

• If "Mode" is Multi

1. If the Voice page "Mode" (knob [2]) setting is Multi, MIDI data for timbre 1 is transmitted / received on the global MIDI channel. MIDI data for timbre 2 is transmitted / received on the MIDI channel specified by the 1. Voice page "T2MIDICh" setting (knob [3]). Other transmission / reception uses the global MIDI channel.

note The global MIDI channel is the basic MIDI channel used by the R3 to transmit and receive MIDI data. It is specified by the 40. GLOBAL-A page setting "MIDI Ch" (knob [1]).

❑ Note-on/off

Note-on [9n, kk, vv], Note-off [8n, kk, vv]

(n: channel, kk: note number, vv: velocity)

When you play the keyboard of the **R3**, note-on / off messages are transmitted. The note-off velocity is transmitted at a fixed 64, but is not received.
If the 40. Global-A page "Position" is PostKBD, note-on / off messages will be transmitted by the arpeggiator when it is running.

❑ Program change, Bank select

Program change [Cn, pp]

(n: channel, pp: program number)

When you switch programs, a program change message with a program number for the corresponding program 1–128 (A1–P8) will be transmitted.
If you want program changes to be transmitted and received, set the 43. MIDI Filt page "ProgChg" to Enable. If this is set to Disable, program change messages will not be transmitted or received.

The **R3** does not transmit or receive bank select messages ([Bn, 00, mm], [Bn, 20, bb]).

Bank select MSB (CC#00) [Bn, 00, mm]
Bank select LSB (CC#32) [Bn, 20, bb]

(n: channel, mm: bank number upper bytes, bb: bank number lower bytes)

When you switch programs in Play mode, Bank Select and Program Change messages are transmitted.

Bank (CC#00) MSB	Bank (CC#32) LSB	Program Change value	Bank&Prog Number
00	00	000–127 (00–7F)	A1–P8

You can use Bank select and program change messages to switch the settings of an individual timbre used by a program to the settings of another timbre, one used by a different program. These messages are received on the MIDI channel of the timbre selected by TIMBRE SELECT.

Bank (CC#00) MSB	Bank (CC#32) LSB	Program Change value	Timbre Number
32	32	000–127 (00–7F)	A1–P8 Timbre 1
32	33	000–127 (00–7F)	A1–P8 Timbre 2

❑ Pitch bend

Pitch bend change [En, bb, mm]

(n: channel, bb: lower digits of value, mm: upper digits of value)

When pitch bend change messages are received, a pitch bend will occur according to the 4. Pitch-B page "BndRange" value. Pitch bend can also be used in a Virtual Patch (20. Patch1–25. Patch6 page) for a synth program, as a modulation source for a vocoder program (38. Filter / Amp page), or as a control source for a effect parameters. In this case, the message will act as a modulation source where mm=64, bb=00 will be 0 (center value) for the range of -127 – +127. (This message is received on the timbre channel.)
When you move the **[PITCH]** wheel on the **R3**, pitch bend change messages are transmitted on the Global MIDI channel.
If you want pitch bend changes to be transmitted and received, set the 43. MIDI Filt page "PitchBnd" to Enable. If this is set to Disable, pitch bend change messages will not be transmitted or received.

❑ Control changes

Control changes [Bn, cc, vv]

(n: channel, cc: control change no., vv: value)

When you use knobs **[1]**–**[4]** to edit certain parameters, or when you operate certain buttons or the **[MOD]** wheel, the assigned control change will be transmitted. Conversely, when control change numbers corresponding to the knob **[1]**–**[4]** settings are received, the corresponding controller or parameter will be controlled.
If you want control changes to be transmitted and received, set the 43. MIDI Filt page "CtrlChg" to Enable. If this is set to Disable, control change messages will not be transmitted or received.

note Use the 44. MIDI CC# page to assign control change messages to parameters.

- **Modulation depth (CC#01) [Bn, 01, vv]**

When a modulation depth message is received, the LFO2 vibrato depth will change according to the value specified for 4. Pitch-B "Vib Int." If the value of the received message is the maximum value (127), vibrato will be applied over the full pitch range specified by "Vib Int." If the value of the received message is 0, no vibrato will apply.
When you move the **R3**'s **[MOD]** wheel, modulation depth messages are transmitted on the Global MIDI channel.

- **Volume (CC#07) [Bn, 07, vv]**

If the 46. Pedal/Sw page "A.Pedal" parameter is set to Volume, operating a foot pedal connected to the **R3** will transmit Volume messages on the Global MIDI channel. If you assign control change (CC#07 – volume) to 12. Amp page "Level," volume messages can be received to control the volume.

- **Panpot (CC#10) [Bn, 0A, vv]**

If the 46. Pedal/Sw page "A.Pedal" parameter is set to Panpot, operating the foot pedal will transmit Panpot messages on the Global MIDI channel. If you assign control change (CC#10 – pan) to 12. Amp page "Panpot" pan messages can be received to control the stereo position of the sound.

- **Expression (CC#11) [Bn, 0B, vv]**

When expression messages are received, the volume of a timbre will be controlled. The volume will be at maximum if the maximum value (127) is received, and at zero if the minimum value (0) is received. If the 46. Pedal/Sw page "A.Pedal" is set to ExpPedal, expression messages will be transmitted on the Global MIDI channel when you operate the pedal.

- **Damper pedal (CC#64) [Bn, 40, vv]**

When damper pedal messages are received, the damper effect (hold) of a timbre will be switched on/off. If the 46. Pedal/Sw page "A.SwFunc" is set to Damper, damper messages (0: off, 7F: on) will be transmitted on the Global MIDI channel when you operate the pedal switch.

- **Portamento (CC#65) [Bn, 41, vv]**

When portamento messages are received, the portamento effect of a timbre will be switched on/off. If the portamento time is set to 0, there will be no portamento effect. If the 46. Pedal/Sw page "A.SwFunc" is set to PortSw, portamento messages (0: off, 7F: on) will be transmitted on the Global MIDI channel when you operate the pedal switch.

Using control changes as modulation sources for virtual patches

By setting the 45. PatchSrc page "MIDI1," "MIDI2," and "MIDI3" to CC#cc (cc=00–95/102–119) you can use control change messages as modulation sources for virtual patches, as the vocoder FC MOD modulation source, or as a control source for a effect parameters. The value (0–127) of the message is used without change as the modulation source.

Assigning control changes to knobs and buttons

The 44. MIDI CC# page lets you assign control changes CC#00–CC#95 and CC#102 – CC#119 to major parameters corresponding to the panel knobs and buttons. When you operate the assigned knob or button, the corresponding control change will be transmitted. When control changes are received from an external device, the **R3** will behave according to the value of the control change, just as when the corresponding knob or button is operated (☞p. 7 "Control change assignments for the **R3**'s knobs and buttons").

Silencing all notes of a given channel

- **All note off (CC#123) [Bn, 7B, 00] (value is 00)**

When an All Note Off message is received, all currently-sounding notes of that channel will be turned off. Some sound may linger due to the envelope settings.

- **All sound off (CC#120) [Bn, 78, 00] (value is 00)**

When an All Sound Off message is received, all notes currently sounding on that channel will be silenced. While All Note Off allows the decay of a note to continue, the All Sound Off will silence the sound immediately. However, this message is intended for use in emergencies, and is not for use during a performance.

Resetting all controllers of a given channel

- **Reset all controllers (CC#121) [Bn, 79, 00] (value is 00)**

When a Reset All Controllers message is received, all controller values currently operating on that channel will be reset. Some parameters assigned using Virtual Patch will not be reset.

❑ Parameters transmitted and received via NRPN

Front panel knobs and buttons other than the controls listed above are assigned NRPN (Non Registered Parameter No.). NRPN messages can be used freely by any musical instrument manufacturer or model.
NRPN editing is performed using the following procedure.

1 Use NRPN MSB (CC#99) [Bn, 63, mm] and NRPN LSB (CC#98) [Bn, 62, rr] (n: channel, mm, rr: parameter no. upper and lower bytes) to select the parameter.

2 Use data entry MSB (CC#6) [Bn, 06, mm] (n: channel, mm: parameter value) to specify the value.

note On the **R3**, only data entry MSB is used.

Controlling the arpeggiator

When arpeggiator settings are modified by the front panel buttons or knobs, the following NRPN messages are transmitted. When these NRPN messages are received, the corresponding arpeggiator settings will change accordingly. These messages are transmitted and received on the Global MIDI channel. For the correspondence between the values of the message and the values of the **R3** parameter, refer to the table.

- **ON/OFF: [Bn, 63, 00, Bn, 62, 02, Bn, 06, mm]**
- **LATCH: [Bn, 63, 00, Bn, 62, 04, Bn, 06, mm]**
- **TYPE: [Bn, 63, 00, Bn, 62, 07, Bn, 06, mm]**
- **GATE: [Bn, 63, 00, Bn, 62, 0A, Bn, 06, mm]**
- **SELECT: [Bn, 63, 00, Bn, 62, 0B, Bn, 06, mm]**

(n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
ON/OFF	00(00)	02(02)	**0:** OFF, **127:** ON	**0...63:** OFF, **64...127:** ON
LATCH	00(00)	04(04)	**0:** OFF, **127:** ON	**0...63:** OFF, **64...127:** ON
TYPE	00(00)	07(07)	**0...21:** Up, **22...42:** Down, **43...63:** Alt1, **64...85:** Alt2, **86...106:** Random, **107...127:** Trigger	**0...21:** Up, **22...42:** Down, **43...63:** Alt1, **64...85:** Alt2, **86...106:** Random, **107...127:** Trigger
GATE	00(00)	10(0A)	Refer to separate table (GATE values)	Refer to separate table (GATE values)
SELECT	00(00)	11(0B)	**1:** Timbre1, **2:** Timbre2, **3...127:** Timbre1+2	**1:** Timbre1, **2:** Timbre2, **3...127:** Timbre1+2

GATE values

Value (transmitted, received)	Gate Time [%]	Value (transmitted, received)	Gate Time [%]	Value (transmitted, received)	Gate Time [%]	Value (transmitted, received)	Gate Time [%]
0	000	**33**	026	**66**	052	**99**	078
1, 2	001	**34**	027	**67**	053	**100**	079
3	002	**35, 36**	028	**68, 69**	054	**101, 102**	080
4	003	**37**	029	**70**	055	**103**	081
5	004	**38**	030	**71**	056	**104**	082
6, 7	005	**39, 40**	031	**72, 73**	057	**105**	083
8	006	**41**	032	**74**	058	**106, 107**	084
9	007	**42**	033	**75**	059	**108**	085
10	008	**43**	034	**76**	060	**109**	086
11, 12	009	**44, 45**	035	**77, 78**	061	**110, 111**	087
13	010	**46**	036	**79**	062	**112**	088
14	011	**47**	037	**80**	063	**113**	089
15	012	**48**	038	**81**	064	**114**	090
16, 17	013	**49, 50**	039	**82, 83**	065	**115, 116**	091
18	014	**51**	040	**84**	066	**117**	092
19	015	**52**	041	**85**	067	**118**	093
20, 21	016	**53**	042	**86**	068	**119**	094
22	017	**54, 55**	043	**87, 88**	069	**120, 121**	095
23	018	**56**	044	**89**	070	**122**	096
24	019	**57**	045	**90**	071	**123**	097
25, 26	020	**58, 59**	046	**91, 92**	072	**124**	098
27	021	**60**	047	**93**	073	**125, 126**	099
28	022	**61**	048	**94**	074	**127**	100
29	023	**62**	049	**95**	075		
30, 31	024	**63, 64**	050	**96, 97**	076		
32	025	**65**	051	**98**	077		

For example if you want to switch the arpeggiator on / off from an external MIDI sequencer, make the following settings.

Off: CC#99: 0, CC#98: 2, CC#6: 0...63 On: CC#99: 0, CC#98: 2, CC#6: 64...127

Controlling the Timbre parameters

These messages are transmitted and received on the Global MIDI channel.

Controlling the Virtual Patch1…Patch6 Source

- **Source1…Source6: [Bn, 63, 04, Bn, 62, 00…05, Bn, 06, mm]**
  (n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
Patch1 Source	04(04)	00(00)	**0...11**: EG1, **12...20**: EG2, **21...31**: EG3, **32...43**: LFO1, **44...52**: LFO2, **53...63**: Velocity, **64...75**: Pitch Bend, **76...84**: Mod Wheel, **85...95**: Keyboard Track, **96...107**: MIDI1, **108...116**: MIDI2, **117...127**: MIDI3	**0...11**: EG1, **12...20**: EG2, **21...31**: EG3, **32...43**: LFO1, **44...52**: LFO2, **53...63**: Velocity, **64...75**: Pitch Bend, **76...84**: Mod Wheel, **85...95**: Keyboard Track, **96...107**: MIDI1, **108...116**: MIDI2, **117...127**: MIDI3
Patch2 Source	04(04)	01(01)		
Patch3 Source	04(04)	02(02)		
Patch4 Source	04(04)	03(03)		
Patch5 Source	04(04)	04(04)		
Patch6 Source	04(04)	05(05)		

Controlling the Virtual Patch1…Patch6 Destination

- **Dest1…Dest6: [Bn, 63, 04, Bn, 62, 08…0D, Bn, 06, mm]**
  (n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
Patch1 Dest	04(04)	08(08)	**0...8**: Pitch, **9...16**: OSC2 Pitch, **17...25**: OSC1 Ctrl, **26...33**: OSC1 Level, **34...42**: OSC2 Level, **43...50**: NOISE Level, **51...59**: Filter1 Type, **60...67**: Filter1 Cutoff, **68...76**: Filter1 Resonance, **77...84**: Filter2 Cutoff, **85...94**: Drive/WS Depth, **95...101**: AMP Level, **102...110**: Panpot, **111...118**: LFO1 Frequency, **119...127**: LFO2 Frequency	**0...8**: Pitch, **9...16**: OSC2 Pitch, **17...25**: OSC1 Ctrl, **26...33**: OSC1 Level, **34...42**: OSC2 Level, **43...50**: NOISE Level, **51...59**: Filter1 Type, **60...67**: Filter1 Cutoff, **68...76**: Filter1 Resonance, **77...84**: Filter2 Cutoff, **85...94**: Drive/WS Depth, **95...101**: AMP Level, **102...110**: Panpot, **111...118**: LFO1 Frequency, **119...127**: LFO2 Frequency
Patch2 Dest	04(04)	09(09)		
Patch3 Dest	04(04)	10(0A)		
Patch4 Dest	04(04)	11(0B)		
Patch5 Dest	04(04)	12(0C)		
Patch6 Dest	04(04)	13(0D)		

Controlling the Mod Sequencer step value 1…16

- **Step value1…16: [Bn, 63, 04, Bn, 62, 10…1F, Bn, 06, mm]**
  (n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
Step 01	04 (04)	10 (10)	Knob is “Pitch” or “OSC2 Semi” : **–24…+00…+24: 0...127** Knob is other parameters: **–63…+00…+63: 0...127**	Knob is “Pitch” or “OSC2 Semi” : **–24…+00…+24: 0...127** Knob is other parameters: **–63…+00…+63: 0...127**
Step 02	04 (04)	11 (11)		
Step 03	04 (04)	12 (12)		
Step 04	04 (04)	13 (13)		
Step 05	04 (04)	14 (14)		
Step 06	04 (04)	15 (15)		
Step 07	04 (04)	16 (16)		
Step 08	04 (04)	17 (17)		
Step 09	04 (04)	18 (18)		
Step 10	04 (04)	19 (19)		
Step 11	04 (04)	20 (1A)		
Step 12	04 (04)	21 (1B)		
Step 13	04 (04)	22 (1C)		
Step 14	04 (04)	23 (1D)		
Step 15	04 (04)	24 (1E)		
Step 16	04 (04)	25 (1F)		

Controlling the vocoder parameters

These messages are transmitted and received on the Global MIDI channel.

FC MOD source of a vocoder program Filter

- **FcModSrc (Fc Modulation Source): [Bn, 63, 04, Bn, 62, 00, Bn, 06, mm]**
  (n: channel, mm: parameter value)

Value (transmitted, received)	Fc Mod Sorce
0...11	EG1
12...20	EG2
21...31	EG3
32...43	LFO1
44...52	LFO2
53...63	Velocity
64...75	Pitch Bend
76...84	Mod Wheel
85...95	KBD Track
96...107	MIDI1
108...116	MIDI2
116...127	MIDI3

Channel parameters

The Channel paramters (channel level and channel pan) of the synthesis filter can be controlled.

- **Level1...Level16: [Bn, 63, 04, Bn, 62, 40...4F, Bn, 06, mm]**
  (n: channel, mm: parameter value)

Vocoder Parameter	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
CH [01] LEVEL	04(04)	64(40)	CH LEVEL: **0...127**	CH LEVEL: **0...127**
CH [02] LEVEL	04(04)	65(41)		
CH [03] LEVEL	04(04)	66(42)		
CH [04] LEVEL	04(04)	67(43)		
CH [05] LEVEL	04(04)	68(44)		
CH [06] LEVEL	04(04)	69(45)		
CH [07] LEVEL	04(04)	70(46)		
CH [08] LEVEL	04(04)	71(47)		
CH [09] LEVEL	04(04)	72(48)		
CH [10] LEVEL	04(04)	73(49)		
CH [11] LEVEL	04(04)	74(4A)		
CH [12] LEVEL	04(04)	75(4B)		
CH [13] LEVEL	04(04)	76(4C)		
CH [14] LEVEL	04(04)	77(4D)		
CH [15] LEVEL	04(04)	78(4E)		
CH [16] LEVEL	04(04)	79(4F)		

- **Pan1...Pan16: [Bn, 63, 04, Bn, 62, 50...5F, Bn, 06, mm]**
  (n: channel, mm: parameter value)

Vocoder Parameter	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value**(received)
CH [01] PAN	04(04)	80(50)	CH PAN: **0/1:** L63, **2:** L62...**63:** L01 **64:** CNT, **65:** R01...**127:** R63	CH PAN: **0/1:** L63, **2:** L62...**63:** L01 **64:** CNT, **65:** R01...**127:** R63
CH [02] PAN	04(04)	81(51)		
CH [03] PAN	04(04)	82(52)		
CH [04] PAN	04(04)	83(53)		
CH [05] PAN	04(04)	84(54)		
CH [06] PAN	04(04)	85(55)		
CH [07] PAN	04(04)	86(56)		
CH [08] PAN	04(04)	87(57)		
CH [09] PAN	04(04)	88(58)		
CH [10] PAN	04(04)	89(59)		
CH [11] PAN	04(04)	90(5A)		
CH [12] PAN	04(04)	91(5B)		
CH [13] PAN	04(04)	92(5C)		
CH [14] PAN	04(04)	93(5D)		
CH [15] PAN	04(04)	94(5E)		
CH [16] PAN	04(04)	95(5F)		

If you are transmitting these parameters between two **R3** units, set both units to the same program settings.

Vocoder Switch

- **Vocoder switch: [Bn, 63, 05, Bn, 62, 04, Bn, 06, mm]**
  (n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
Vocoder switch	05(05)	04(00)	**0**: OFF, **127**: ON	**0**: OFF, **127**: ON

Other controls

These messages are transmitted and received on the Global MIDI channel.

Voice Mode (Voice page "Mode")

- **Voice Mode ("Mode"): [Bn, 63, 05, Bn, 62, 00, Bn, 06, mm]**
  (n: channel, mm: parameter value)

Synth Parameter	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
Voice Mode ("Mode")	05(05)	00(00)	**0…31**: Single, **32…63**: Layer **64…95**: Split , **96…127**: Multi	**0…31**: Single, **32…63**: Layer **64…95**: Split , **96…127**: Multi

❑ System exclusive messages

R3 format

F0: exclusive status
42: Korg ID
3n: [n=0–F] MIDI channel
58: **R3** model ID
ff: function ID (type of message)
—
F7: end of exclusive

Universal system exclusive

System exclusive messages include a special category of messages whose purpose is officially defined. These are called universal system exclusive messages. Of these universal system exclusive messages, the **R3** supports Master Volume and Master Fine Tuning.

Master volume [F0, 7F, nn, 04, 01, vv, mm, F7]

(vv: lower byte of value, mm: upper byte of value, [mm, vv=7F, 7F] is Max, [mm, vv=00, 00] is 0)

When a Master Volume message is received, the **R3** will adjust its overall volume.

If SHIFT Function "AUDIO IN THRU" is ON, the input signal of AUDIO IN 1/2 will not be affected by Master Volume.

Master fine tuning [F0, 7F, nn, 04, 03, vv, mm, F7]

(A value of 8192 [mm, vv=40, 00] is center (0 cent, A4=440.0Hz), 4096 [mm, vv=20, 00] is -50 cents, and 12288 [mm, vv=60, 00] is +50 cents.)
When master fine tuning is received, the value specified for the **R3**'s 40. Global-A page "MstTune" will be ignored, and the overall pitch will be specified by the data that was received.

Transmitting sound settings etc. (Data Dump)

Program data and global data can be transmitted as a MIDI exclusive data. The action of transmitting MIDI exclusive data to an external MIDI device is called a data dump.
By performing a data dump, you can store various types of data on an external MIDI device, or rewrite the sounds or settings of a second **R3**.
Data dumps can be performed on the **R3** as follows.

- Use the SHIFT function "MIDI DUMP" to select the data that you want to transmit (1 PROG, AllPROG, Global, AllData), and dump the data.
  1 PROG will dump only the data of the selected program. When the **R3** receives such a data dump, the settings of the currently selected program will be rewritten by the data that was received. In this case, the data will not be saved unless you perform the Write operation.
  AllPROG will dump the data for all programs saved in memory.
  Global will dump the global data (GLOBAL, MIDI, and some of the SHIFT function settings ☞R3 owner's manual p.77).
  AllData will dump all programs as well as global data.
- When a dump request is received from an external device, the **R3** will transmit the data dump that was requested.

If you want the **R3** to receive a data dump, turn the SHIFT function "PROTECT" Off, and set the 43. MIDI Filt page "SystemEX" to Enable. If this is set to Disable, data dumps can not be received.

note If you wish to obtain the "MIDI Implementation" which includes details of the MIDI exclusive format, refer to "R3_MIDI_Imple_EFGJ1.pdf" on the included CD-ROM.

❑ Realtime Messages

Starting/stopping the arpeggiator

When the **R3**'s arpeggiator is synchronized to a connected external MIDI device, system realtime messages Start and Stop will control the arpeggiator.

Start [FA]

When a Start [FA] message is received, the arpeggiator will start from the pitch of the first played note.

Stop [FC]

When a Stop [FC] message is received, the arpeggiator will stop. (It will not be turned off; the arpeggiator will start again when additional notes are played.)

Front panel knob/button control change assignments

Control changes can be assigned to each front panel knob / button of the **R3** so that the changes in sound as controlled by knob / button operations can be transmitted as performance data.

note For details on assigning control changes to the **R3**'s knobs and buttons, refer to **R3** oner's manual page 71.

note Different parameters are assigned to synth parameters and vocoder parameters.

If you are using two **R3** units to transmit and receive these parameters, you must set the transmitting and receiving programs to the same settings.

Page	Parameter	Initial	**Value** (transmitted)	**Value** (received)
UNISON	Sw	CC#03	0...31: Off, 32...63: 2Voice, 64...95: 3Voice, 96...127: 4Voice	0...31: Off, 32...63: 2Voice, 64...95: 3Voice, 96...127: 4Voice
PITCH-A	Portamnt	CC#05	0...127	0...127
OSC1	OSC1Wave	CC#08	0...15: Saw, 16...31: Square, 32...47: Triangle, 48...63: Sine, 64...79: Formant, 80...95: Noise, 96...111: DWGS, 112...127: AudioIn	0...15: Saw, 16...31: Square, 32...47: Triangle, 48...63: Sine, 64...79: Formant, 80...95: Noise, 96...111: DWGS, 112...127: AudioIn
	OSC1Mod	CC#09	0...31: Waveform, 32...63: Cross, 64...95: Unison, 96...127: VPM	0...31: Waveform, 32...63: Cross, 64...95: Unison, 96...127: VPM
	OSC1Ctr1	CC#15	0...127	0...127
	OSC1Ctr2	CC#17	0...127	0...127
OSC2	OSC2Wave	CC#18	0...31: Saw, 32...63: Square, 64...95: Triangle, 96...127: Sine	0...31: Saw, 32...63: Square, 64...95: Triangle, 96...127: Sine
	OSC2Mod	CC#19	0...31: Off, 32...63: Ring, 64...95: Sync, 96...127: RingSync	0...31: Off, 32...63: Ring, 64...95: Sync, 96...127: RingSync
	OSC2Semi	CC#20	refer to "OSC2Semi" value ☞p.10	refer to "OSC2Semi" value ☞p.10
	OSC2Tune	CC#21	0...127	0...127
MIXER	OSC1Lvl	CC#23	0...127	0...127
	OSC2Lvl	CC#24	0...127	0...127
	NoiseLvl	CC#25	0...127	0...127
FILTER1-A	Cutoff1	CC#74	0...127	0...127
	Reso1	CC#71	0...127	0...127
	FiltBal1	CC#27	refer to "FilterBal" Value ☞p.10	refer to "FilterBal" Value ☞p.10
	Routing1	CC#26	0...31: Single, 32...63: Serial, 64...95: Parallel, 96...127: Indiv	0...31: Single, 32...63: Serial, 64...95: Parallel, 96...127: Indiv
FILTER1-B	EG1 Int1	CC#79	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
	Key Trk1	CC#28	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
FILTER2-A	Cutoff2	CC#30	0...127	0...127
	Reso2	CC#68	0...127	0...127
	Type2	CC#29	0...31: LPF, 32...63: HPF, 64...95: BPF, 96...127: COMB	0...31: LPF, 32...63: HPF, 64...95: BPF, 96...127: COMB
FILTER2-B	EG1 Int2	CC#69	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
	Key Trk2	CC#82	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
AMP	Level	CC#07	0...127	0...127
	Panpot	CC#10	0/1: L63, 2: L62...63: L01, 64: CNT, 65: R01...127: R63	0/1: L63, 2: L62...63: L01, 64: CNT, 65: R01...127: R63
DRIVE/WS	WS Depth	CC#83	0...127	0...127
EG1	Attack1	CC#85	0...127	0...127
	Decay1	CC#86	0...127	0...127
	Sustain1	CC#87	0...127	0...127
	Release1	CC#88	0...127	0...127
EG2	Attack2	CC#73	0...127	0...127
	Decay2	CC#75	0...127	0...127
	Sustain2	CC#70	0...127	0...127
	Release2	CC#72	0...127	0...127

Page	Parameter	Initial	**Value** (transmitted)	**Value** (received)
LFO1	LFO1Wave	CC#89	0...25: Saw, 26...50: Square1, 51...76: Triangle, 77...101: S/H, 102...127: Ramdom	0...25: Saw, 26...50: Square1, 51...76: Triangle, 77...101: S/H, 102...127: Ramdom
	LFO1Freq	CC#90	0...127, BPM Sync=On: ☞p.10	0...127, BPM Sync=On: ☞p.10
LFO2	LFO2Wave	CC#102	0...25: Saw, 26...50: Square2, 51...76: Triangle, 77...101: S/H, 102...127: Ramdom	0...25: Saw, 26...50: Square2, 51...76: Triangle, 77...101: S/H, 102...127: Ramdom
	LFO2Freq	CC#76	0...127, BPM Sync=On: ☞p.10	0...127, BPM Sync=On: ☞p.10
PATCH1	P.Int1	CC#103	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
PATCH2	P.Int2	CC#104	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
PATCH3	P.Int3	CC#105	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
PATCH4	P.Int4	CC#106	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
PATCH5	P.Int5	CC#107	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
PATCH6	P.Int6	CC#108	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
EQ	LoEqGain	CC#110	refer to “EqGain value” ☞p.11	refer to “EqGain value” ☞p.11
	HiEqGain	CC#109	refer to “EqGain value” ☞p.11	refer to “EqGain value” ☞p.11
MOD SEQ	ModSeqSw	CC#111	0: Off, 127: On	0...63: Off, 64...127: On
INSERT FX1	IFX1 D/W	CC#115	0...127	0: Dry, 1...126, 127: Wet
	IFX1Knob	CC#12	0...127	0...127
INSERT FX2	IFX2 D/W	CC#116	0...127	0: Dry, 1...126, 127: Wet
	IFX2Knob	CC#13	0...127	0...127
MASTER FX	MFX D/W	CC#94	0...127	0: Dry, 1...126, 127: Wet
	MFX Knob	CC#114	0...127	0...127
Front panel	FORMANT MOTION ON/OFF	Off	0: Off, 127: On	0...63: Off, 64...127: On
CARRIER	Tmbr1Lvl	Off	0...127	0...127
	Input2Lvl	Off	0...127	0...127
	Vcd Lvl	Off	0...127	0...127
MOD-A	Frmnt No	Off	0...7: 1, 8...15: 2, 16...23: 3, 24...31: 4, 32...39: 5, 40...47: 6, 48...55: 7, 56...63: 8, 64...71: 9, 72...79: 10, 80...87: 11, 88...95: 12, 96...103: 13, 104...111: 14, 112...119: 15, 120...127: 16	0...7: 1, 8...15: 2, 16...23: 3, 24...31: 4, 32...39: 5, 40...47: 6, 48...55: 7, 56...63: 8, 64...71: 9, 72...79: 10, 80...87: 11, 88...95: 12, 96...103: 13, 104...111: 14, 112...119: 15, 120...127: 16
MOD-B	Threshld	Off	0...127	0...127
	HPF Gate	Off	0: Disable, 127: Enable	0...63: Disable, 64...127: Enable
	HPF Lvl	Off	0...127	0...127
FILTER	FrmntSft	Off	0...25: -2, 26...51: -1, 52...76: 0, 77...102: +1, 103...127: +2	0...25: -2, 26...51: -1, 52...76: 0, 77...102: +1, 103...127: +2
	FcOffset	Off	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
	Vcd Reso	Off	0...127	0...127
	E.F.Sens	Off	0...127	0...127
FILTER/AMP	FcModInt	Off	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63	0/1: -63, 2: -62...63: -1, 64: 0, 65: +1...127: +63
	DirectLv	Off	0...127	0...127

OSC 2 "OSC2Semi" values

The following table shows how the control change values transmitted / received by the 6. OSC2 page "OSC2Semi" setting (knob [3]) correspond to the value of the parameter.

Value (transmitted, received)	**OSC Semi**	**Value** (transmitted, received)	**OSC Semi**
0…2	–24	**66, 67**	+1
3…5	–23	**68…70**	+2
6, 7	–22	**71…73**	+3
8…10	–21	**74, 75**	+4
11…13	–20	**76…78**	+5
14, 15	–19	**79, 80**	+6
16…18	–18	**81…83**	+7
19, 20	–17	**84…86**	+8
21…23	–16	**87, 88**	+9
24…26	–15	**89…91**	+10
27, 28	–14	**92…94**	+11
29…31	–13	**95, 96**	+12
32, 33	–12	**97…99**	+13
34…36	–11	**100, 101**	+14
37…39	–10	**102…104**	+15
40, 41	–9	**105…107**	+16
42…44	–8	**108, 109**	+17
45…47	–7	**110…112**	+18
48, 49	–6	**113, 114**	+19
50…52	–5	**115…117**	+20
53, 54	–4	**118…120**	+21
55…57	–3	**121, 122**	+22
58…60	–2	**123…125**	+23
61, 62	–1	**126, 127**	+24
63…65	0		

"FilterBal" values

The following table shows how the control change values transmitted / received by the 8. Filt1-A page "FiltBal1" setting (knob [2]) correspond to the value of the parameter.

Value (transmitted, received)	**Filter Balance**
0	–24LPF
1…30	Intermediate the characters between –24LPF and –12LPF.
31…33	–12LPF
34…62	Intermediate the characters between –12LPF and HPF.
63…65	HPF
66…94	Intermediate the characters between HPF and BPF.
95…97	BPF
98…126	Intermediate the characters between BPF and THRU.
127	THRU

"SyncNote" value when LFO 1/2 or DELAY "BPM Sync" = ON

For LFO 1/2 and the insert effect or master effect delays, the LFO 1/2 "Freq" (knob [4]) or delay parameter will change to "SyncNote" if BPM Sync is turned on. In this case, the control change value transmitted / received for the knob operation will correspond to the parameter value as shown in the following table.

Value (transmitted, received)	**LFO Sync Note**	**DELAY Sync Note**
0…7	8/1	8/1
8…14	4/1	4/1
15…22	2/1	2/1
23…29	1/1	1/1
30…37	3/4	3/4
38…44	1/2	1/2
45…52	3/8	3/8
53…59	1/3	1/3
60…67	1/4	1/4
68…74	3/16	3/16
75…82	1/6	1/6
83…89	1/8	1/8
90…97	1/12	1/12
98…104	1/16	1/16
105…112	1/24	1/24
113…119	1/32	1/32
120…127	1/64	1/64

"EQ Gain" values

The following table shows how the control change values transmitted / received by the 28. EQ page "LoEQGain" and "HiEQGain" settings (knobs [2] and [4]) correspond to the value of the parameter.

Value (transmitted, received)	**EQ Gain (dB)**	**Value** (transmitted, received)	**EQ Gain (dB)**
0…2	–15.0	**66, 67**	+0.5
3, 4	–14.5	**68, 69**	+1.0
5, 6	–14.0	**70, 71**	+1.5
7, 8	–13.5	**72, 73**	+2.0
9, 10	–13.0	**74, 75**	+2.5
11, 12	–12.5	**76, 77**	+3.0
13, 14	–12.0	**78, 79**	+3.5
15, 16	–11.5	**80, 81**	+4.0
17, 18	–11.0	**82, 83**	+4.5
19, 20	–10.5	**84…86**	+5.0
21…23	–10.0	**87, 88**	+5.5
24, 25	–9.5	**89, 90**	+6.0
26, 27	–9.0	**91, 92**	+6.5
28, 29	–8.5	**93, 94**	+7.0
30, 31	–8.0	**95, 96**	+7.5
32, 33	–7.5	**97, 98**	+8.0
34, 35	–7.0	**99, 100**	+8.5
36, 37	–6.5	**101, 102**	+9.0
38, 39	–6.0	**103, 104**	+9.5
40, 41	–5.5	**105…107**	+10.0
42…44	–5.0	**108, 109**	+10.5
45, 46	–4.5	**110, 111**	+11.0
47, 48	–4.0	**112, 113**	+11.5
49, 50	–3.5	**114, 115**	+12.0
51, 52	–3.0	**116, 117**	+12.5
53, 54	–2.5	**118, 119**	+13.0
55, 56	–2.0	**120, 121**	+13.5
57, 58	–1.5	**122, 123**	+14.0
59, 60	–1.0	**124, 125**	+14.5
61, 62	–0.5	**126 127**	+15.0
63…65	+0.0		

IMPORTANT NOTICE TO CONSUMERS

This product has been manufactured according to strict specifications and voltage requirements that are applicable in the country in which it is intended that this product should be used. If you have purchased this product via the internet, through mail order, and/or via a telephone sale, you must verify that this product is intended to be used in the country in which you reside.
WARNING: Use of this product in any country other than that for which it is intended could be dangerous and could invalidate the manufacturer's or distributor's warranty.
Please also retain your receipt as proof of purchase otherwise your product may be disqualified from the manufacturer's or distributor's warranty.

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