ES-8 Bulk Dump Messages

Date: Apr. 22, 2015
Version: 1.00

Introduction

This document explains how the ES-8 bulk dump messages are structured.

Note

The bulk dump messages of the ES-8 handle the unit's internal data directly. For this reason if a bulk dump message with inappropriate content is received, the ES-8 may malfunction or operate abnormally.

Bulk dump message organization

The system/patch data of the ES-8 is structured in units of 250-byte pages; there are eight system pages, and one page per patch. Bulk dump messages transmit and receive one page of data divided into two messages, each containing 125 bytes.

Bulk dump message structure

Bulk dump messages are Roland system exclusive messages having the structure "one-way communication data set 1 DT1 (12H)" (Model ID = 00H 00H 00H 14H - ES-8).

Status	Data byte	Status
F0H	41H, dev, 00H, 00H, 00H, 14H 12H, aaH, bbH, ccH, ddH, eeH, ... ffH, sum	F7H

Byte	Explanation
F0H	Exclusive status
41H	Manufacturer ID (Roland)
Dev	Device ID (Dev=00H-1FH, 7FH)
00H	Model ID #1 (ES-8)
00H	Model ID #2 (ES-8)
00H	Model ID #3 (ES-8)
14H	Model ID #4 (ES-8)
12H	Command ID (DT1)
aaH	Message ID MSB
bbH	Message ID LSB
ccH	Data
:	:
ffH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

Message ID MSB	Message ID LSB	Explanation	
00H	00H	system	page1-0
00H	01H	system	page1-1
00H	02H	system	page2-0
00H	03H	system	page2-1
	:		
00H	0CH	system	page7-0
00H	0DH	system	page7-1
00H	0EH	system	page8-0
00H	0FH	system	page8-1
00H	10H	patch00-1	page1-0
00H	11H	patch00-1	page1-1
00H	12H	patch00-2	page1-0
00H	13H	patch00-2	page1-1
		:	
0CH	4CH	patch99-7	page1-0
0CH	4DH	patch99-7	page1-1
0CH	4EH	patch99-8	page1-0
0CH	4FH	patch99-8	page1-1

The checksum conforms to Roland system exclusive message DT1; it is the value such that when the bytes from the message ID MSB through the checksum are added, the lower seven bits of the resulting sum are 0.

Transmitting and receiving messages to and from the unit

The message transmission order is important.

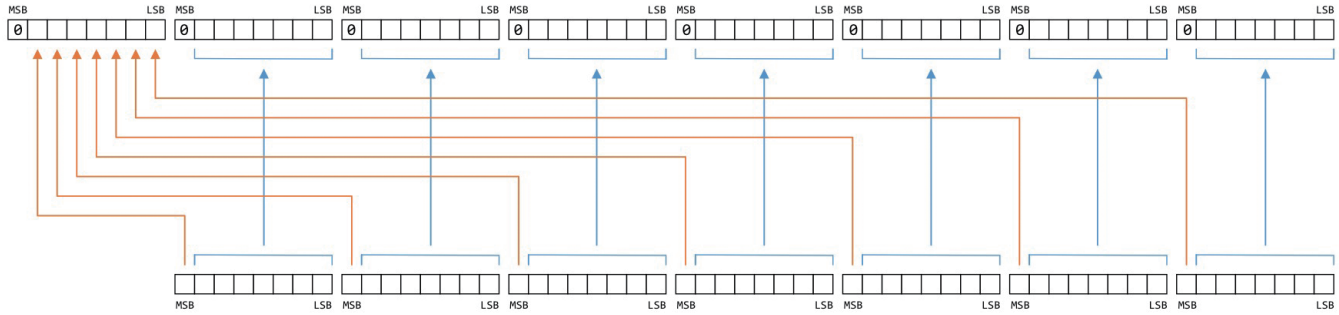
Messages of the same page must be transmitted consecutively as a set, starting with the lowest message ID.

One message by itself is invalid. Allow at least 50 msec of time between messages.

7-bit encoding

Starting with the lowest address, every 7 bytes of data for each page is placed within the message as an 8-byte data cluster that has been 7-bit encoded.

7-bit encoding converts the data into one byte that contains the sign bit of each byte, and the seven bytes from which the sign bit has been removed.



Data structure

Each parameter exists in the page not in units of bytes, but packed in bit units.

system page1

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_CURRENT_NUM	0	0	10	0	799
ID_SYSTEM_PANEL_LOCK	1	2	1	0	1
ID_SYSTEM_PLAY_OPTION_SW_MODE	1	3	1	0	1
ID_SYSTEM_PLAY_OPTION_BANK_CHANGE_MODE	1	4	1	0	1
ID_SYSTEM_PLAY_OPTION_EXT_CTL_TYPE_CTL1	1	5	3	0	5
ID_SYSTEM_PLAY_OPTION_EXT_CTL_TYPE_CTL2	2	0	3	0	5
ID_SYSTEM_PLAY_OPTION_EXT_CTL_TYPE_CTL3	2	3	3	0	5
ID_SYSTEM_PLAY_OPTION_EXT_CTL_TYPE_CTL4	2	6	3	0	5
ID_SYSTEM_PLAY_OPTION_EXT_CTL_TYPE_CTL5	3	1	3	0	5
ID_SYSTEM_PLAY_OPTION_EXT_CTL_TYPE_CTL6	3	4	3	0	5
ID_SYSTEM_PLAY_OPTION_BANK_EXTENT_MIN	3	7	7	0	99
ID_SYSTEM_PLAY_OPTION_BANK_EXTENT_MAX	4	6	7	0	99
ID_SYSTEM_PLAY_OPTION_PATCH_CHANGE_TIME	5	5	4	0	10
ID_SYSTEM_PREFERENCE_INPUT_SELECT	6	1	2	0	2
ID_SYSTEM_PREFERENCE_INPUT_BUFFER	6	3	2	0	2
ID_SYSTEM_PREFERENCE_OUTPUT_SELECT	6	5	2	0	3
ID_SYSTEM_PREFERENCE_OUTPUT_BUFFER	6	7	2	0	2
ID_SYSTEM_PREFERENCE_LOOP7_RETURN_MODE	7	1	1	0	1
ID_SYSTEM_PREFERENCE_LOOP8_RETURN_MODE	7	2	1	0	1
ID_SYSTEM_PREFERENCE_VOLUME_LOOP_LIFT	7	3	1	0	1
ID_SYSTEM_MIDI_SETTING_MIDI_OUT_MODE	7	4	1	0	1
ID_SYSTEM_MIDI_SETTING_RX_CH	7	5	4	0	15
ID_SYSTEM_MIDI_SETTING_DEVICE_ID	8	1	5	0	31
ID_SYSTEM_MIDI_SETTING_SYNC_CLOCK	8	6	1	0	1
ID_SYSTEM_MIDI_SETTING_CLOCK_OUT	8	7	1	0	1
ID_SYSTEM_OTHERS_LCD_CONTRAST	9	0	4	0	9
ID_SYSTEM_OTHERS_EXP1_POLARITY	9	4	1	0	1
ID_SYSTEM_OTHERS_EXP2_POLARITY	9	5	1	0	1
ID_SYSTEM_OTHERS_CTL1_POLARITY	9	6	1	0	1
ID_SYSTEM_OTHERS_CTL2_POLARITY	9	7	1	0	1
ID_SYSTEM_OTHERS_CTL3_POLARITY	10	0	1	0	1
ID_SYSTEM_OTHERS_CTL4_POLARITY	10	1	1	0	1
ID_SYSTEM_PREFERENCE_MEMORY_MANUAL_SW_MODE	10	2	1	0	1
ID_SYSTEM_PREFERENCE_MUTE_BYPASS_SW_MODE	10	3	1	0	1
ID_SYSTEM_MEMORY_MANUAL	10	4	1	0	1

system page2

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_PC_MAP_BANK0_PC #001	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK0_PC #002	1	2	10	0	799
:					
ID_SYSTEM_PC_MAP_BANK0_PC #127	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK0_PC #128	158	6	10	0	799

system page3

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_PC_MAP_BANK1_PC #001	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK1_PC #002	1	2	10	0	799
:					
ID_SYSTEM_PC_MAP_BANK1_PC #127	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK1_PC #128	158	6	10	0	799

system page4

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_PC_MAP_BANK2_PC #001	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK2_PC #002	1	2	10	0	799
:					
ID_SYSTEM_PC_MAP_BANK2_PC #127	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK2_PC #128	158	6	10	0	799

system page5

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_PC_MAP_BANK3_PC #001	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK3_PC #002	1	2	10	0	799
:					
ID_SYSTEM_PC_MAP_BANK3_PC #127	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK3_PC #128	158	6	10	0	799

system page6

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_PC_MAP_BANK4_PC #001	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK4_PC #002	1	2	10	0	799
:					
ID_SYSTEM_PC_MAP_BANK4_PC #127	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK4_PC #128	158	6	10	0	799

system page7

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_PC_MAP_BANK5_PC #001	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK5_PC #002	1	2	10	0	799
:					
ID_SYSTEM_PC_MAP_BANK5_PC #127	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK5_PC #128	158	6	10	0	799

system page8

id	byteOff	bitOff	bit	min	max
ID_SYSTEM_PC_MAP_BANK6_PC #001	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK6_PC #002	1	2	10	0	799
:					
ID_SYSTEM_PC_MAP_BANK6_PC #127	0	0	10	0	799
ID_SYSTEM_PC_MAP_BANK6_PC #128	158	6	10	0	799

patch page1

id	byteOff	bitOff	bit	min	max
ID_PATCH_LOOP_SW_LOOP1	0	0	1	0	1
ID_PATCH_LOOP_SW_LOOP2	0	1	1	0	1
:					
ID_PATCH_LOOP_SW_LOOP8	0	7	1	0	1
ID_PATCH_LOOP_SW_LOOPV	1	0	1	0	1
ID_PATCH_LOOP_POSITION 1	1	1	4	0	12
:					
ID_PATCH_LOOP_POSITION 16	8	5	4	0	12
ID_PATCH_CARRY_OVER_LOOP1	9	1	1	0	1
ID_PATCH_CARRY_OVER_LOOP2	9	2	1	0	1
:					
ID_PATCH_CARRY_OVER_LOOP8	1 0	0	1	0	1
ID_PATCH_CARRY_OVER_LOOPV	10	1	1	0	1
ID_PATCH_INPUT_SELECT	10	2	1	0	1
ID_PATCH_INPUT_BUFFER	10	3	1	0	1
ID_PATCH_OUTPUT_SELECT	10	4	2	0	2
ID_PATCH_OUTPUT_BUFFER	10	6	1	0	1

id	byteOff	bitOff	bit	min	max
ID_PATCH_OUTPUT_GAIN	10	7	2	0	3
ID_PATCH_CTL1	11	1	9	0	500
ID_PATCH_CTL2	12	2	9	0	500
ID_PATCH_CTL3	13	3	9	0	500
ID_PATCH_CTL4	14	4	9	0	500
ID_PATCH_CTL5	15	5	9	0	500
ID_PATCH_CTL6	16	6	9	0	500
ID_PATCH_EXP1	17	7	8	0	129
ID_PATCH_EXP2	18	7	8	0	129
ID_PATCH_MASTER_BPM	19	7	9	20	500
ID_PATCH_NAME1	21	0	7	0x20	0x7e
:					
ID_PATCH_NAME16	34	1	7	0x20	0x7e
ID_PATCH_LED_NUM1	35	0	1	0	1
ID_PATCH_LED_NUM2	35	1	1	0	1
ID_PATCH_LED_NUM3	35	2	1	0	1
ID_PATCH_LED_NUM4	35	3	1	0	1
ID_PATCH_LED_NUM5	35	4	1	0	1
ID_PATCH_LED_NUM6	35	5	1	0	1
ID_PATCH_LED_NUM7	35	6	1	0	1
ID_PATCH_LED_NUM8	35	7	1	0	1
ID_PATCH_LED_BANK_D	36	0	1	0	1
ID_PATCH_LED_BANK_U	36	1	1	0	1
ID_PATCH_MIDI_TX_CH 1	36	2	5	0	16
:					
ID_PATCH_MIDI_TX_CH 8	40	4	5	0	16
ID_PATCH_MIDI_PC_BANK_LSB 1	41	2	8	0	128
:					
ID_PATCH_MIDI_PC_BANK_LSB 8	4 8	2	8	0	128
ID_PATCH_MIDI_PC_BANK_MSB 1	49	2	8	0	128
:					
ID_PATCH_MIDI_PC_BANK_MSB 8	56	2	8	0	128
ID_PATCH_MIDI_PC 1	57	2	8	0	128
:					
ID_PATCH_MIDI_PC 8	64	2	8	0	128
ID_PATCH_MIDI_CTL1_CC 1	65	2	8	0	128
:					
ID_PATCH_MIDI_CTL1_CC 8	72	2	8	0	128
ID_PATCH_MIDI_CTL1_CC_VAL 1	73	2	7	0	127
:					
ID_PATCH_MIDI_CTL1_CC_VAL 8	79	3	7	0	127
ID_PATCH_MIDI_CTL2_CC 1	80	2	8	0	128
:					
ID_PATCH_MIDI_CTL2_CC 8	87	2	8	0	128
ID_PATCH_MIDI_CTL2_CC_VAL 1	88	2	7	0	127
:					
ID_PATCH_MIDI_CTL2_CC_VAL 8	94	3	7	0	127
ID_PATCH_CTL_FUNC MEM_MAN	95	2	5	0	21
ID_PATCH_CTL_FUNC MUTE	95	7	5	0	21
ID_PATCH_CTL_FUNC BANK_D	96	4	5	0	21
ID_PATCH_CTL_FUNC BANK_U	97	1	5	0	21
ID_PATCH_CTL_FUNC NUM_1	97	6	5	0	21
:					
ID_PATCH_CTL_FUNC NUM_8	102	1	5	0	21
ID_PATCH_CTL_FUNC CTL IN 1	102	6	5	0	21
:					
ID_PATCH_CTL_FUNC CTL IN 4	104	5	5	0	21
ID_PATCH_CTL_MIN MEM_MAN	105	2	1	0	1
ID_PATCH_CTL_MIN MUTE	105	3	1	0	1
ID_PATCH_CTL_MIN BANK_D	105	4	1	0	1
ID_PATCH_CTL_MIN BANK_U	105	5	1	0	1
ID_PATCH_CTL_MIN NUM_1	105	6	1	0	1
:					
ID_PATCH_CTL_MIN NUM_8	106	5	1	0	1
ID_PATCH_CTL_MIN CTL IN 1	106	6	1	0	1
:					
ID_PATCH_CTL_MIN CTL IN 4	107	1	1	0	1
ID_PATCH_CTL_MAX MEM_MAN	107	2	1	0	1
ID_PATCH_CTL_MAX MUTE	107	3	1	0	1
ID_PATCH_CTL_MAX BANK_D	107	4	1	0	1
ID_PATCH_CTL_MAX BANK_U	107	5	1	0	1
ID_PATCH_CTL_MAX NUM_1	107	6	1	0	1
:					
ID_PATCH_CTL_MAX NUM_8	108	5	1	0	1
ID_PATCH_CTL_MAX CTL IN 1	108	6	1	0	1
:					

id	byteOff	bitOff	bit	min	max
ID_PATCH_CTL_MAX CTL IN 4	109	1	1	0	1
ID_PATCH_CTL_MOD	109	2	1	0	1
ID_PATCH_EXP_FUNC 1	111	2	2	0	3
ID_PATCH_EXP_FUNC 2	111	4	2	0	3
ID_PATCH_EXP_MIN 1	111	6	9	0	500
ID_PATCH_EXP_MIN 2	112	7	9	0	500
ID_PATCH_EXP_MAX 1	114	0	9	0	500
ID_PATCH_EXP_MAX 2	115	1	9	0	500
ID_PATCH_ASSIGN_SW 1	116	2	1	0	1
:					
ID_PATCH_ASSIGN_SW 12	117	5	1	0	1
ID_PATCH_ASSIGN_SOURCE 1	117	6	5	0	21
:					
ID_PATCH_ASSIGN_SOURCE 12	124	5	5	0	21
ID_PATCH_ASSIGN_MODE 1	125	2	1	0	1
:					
ID_PATCH_ASSIGN_MODE 12	126	5	1	0	1
ID_PATCH_ASSIGN_TARGET 1	126	6	6	0	37
:					
ID_PATCH_ASSIGN_TARGET 12	135	0	6	0	37
ID_PATCH_ASSIGN_TARGET_CC_CH 1	135	6	4	0	15
:					
ID_PATCH_ASSIGN_TARGET_CC_CH 12	141	2	4	0	15
ID_PATCH_ASSIGN_TARGET_CC_NO 1	141	6	7	0	127
:					
ID_PATCH_ASSIGN_TARGET_CC_NO 12	151	3	7	0	127
ID_PATCH_ASSIGN_TARGET_MIN 1	152	2	9	0	511
:					
ID_PATCH_ASSIGN_TARGET_MIN 12	163	5	9	0	511
ID_PATCH_ASSIGN_TARGET_MAX 1	165	6	9	0	511
:					
ID_PATCH_ASSIGN_TARGET_MAX 12	177	1	9	0	511
ID_PATCH_ASSIGN_ACT_RANGE_LO 1	179	2	7	0	126
:					
ID_PATCH_ASSIGN_ACT_RANGE_LO 12	188	7	7	0	126
ID_PATCH_ASSIGN_ACT_RANGE_HI 1	189	6	7	1	127
:					
ID_PATCH_ASSIGN_ACT_RANGE_HI 12	199	3	7	1	127
ID_PATCH_ASSIGN_INT_PEDAL_TRIGGER 1	200	2	5	0	24
:					
ID_PATCH_ASSIGN_INT_PEDAL_TRIGGER 12	207	1	5	0	24
ID_PATCH_ASSIGN_INT_PEDAL_TRIGGER_CC 1	207	6	7	0	127
:					
ID_PATCH_ASSIGN_INT_PEDAL_TRIGGER_CC 12	2 17	3	7	0	127
ID_PATCH_ASSIGN_INT_PEDAL_TIME 1	218	2	7	0	100
:					
ID_PATCH_ASSIGN_INT_PEDAL_TIME 12	217	7	7	0	100
ID_PATCH_ASSIGN_INT_PEDAL_CURVE 1	228	6	2	0	2
:					
ID_PATCH_ASSIGN_INT_PEDAL_CURVE 12	231	4	2	0	2
ID_PATCH_ASSIGN_WAVE_PEDAL_RATE 1	231	6	7	1	120
:					
ID_PATCH_ASSIGN_WAVE_PEDAL_RATE 12	41	3	7	1	120
ID_PATCH_ASSIGN_WAVE_PEDAL_FORM 1	242	2	2	0	2
:					
ID_PATCH_ASSIGN_WAVE_PEDAL_FORM 12	245	0	2	0	2

There is an unused area following the last parameter of each page. The unused area should be packed with 00H, and the messages structured in page units.

Effects Switching System
Model: ES-8

MIDI Implementation Chart

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Function...		**Transmitted**	**Recognized**	**Remarks**
Basic	Default	1—16	1—16	Memorized
Channel	Changed	1—16	1—16	
	Default	x	x	
Mode	Messages	x	x	
	Altered	**********	x	
Note		x	x	
Number	: True Voice	**********	**********	
Velocity	Note On	x	x	
	Note Off	x	x	
After	Key's	x	x	
Touch	Channel's	x	x	
Pitch Bend		x	x	
Control Change		o o o	o *1 *2 o o	
Program		o	o	
Change	: True Number	0—127	0—127	Program Number 1—128
System Exclusive		o	o	
System Common	: Song Position	x	x	
	: Song Select	x	x	
	: Tune Request	x	x	
System	: Clock	o	o	
Real Time	: Command	x	x	
	: All Sound Off	x	x	
	: Reset All Controllers	x	x	
Aux	: Local On/Off	x	x	
Messages	: All Notes Off	x	x	
	: Active Sensing	o	o	
	: System Reset	x	x	
Notes	*1 CC#0 above 06H and CC#32 are ignored. *2 All messages specified as an assignment Source parameter are recognized.			

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

O : Yes
X : No