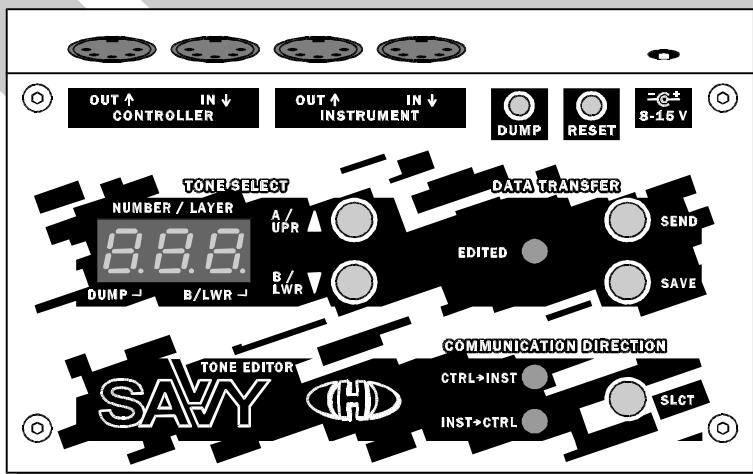


SAVVY

Tone Parameters Editor & Controller



MIDI System Exclusive Communication

Kawai K3, K3M

OS 007 ver. 2.0



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1 SYSEX MESSAGES STRUCTURE

For Kawai K3, SAVVY receives / transmits own specific SysEx messages with the following structure:

[hex]	[bin]	Byte	Range [dec]
F0	11110000	Start SysEx	
00	00000000	Manufacturer ID (3 bytes)	
20	00100000		
21	00100001		
ii	0iiiiiii	Device ID ¹⁾	0 ~ 15 (MIDI Chnl) / 127 (Universal)
41	01000001	Model ID = SAVVY	
cc	0ccc0000	Command ²⁾	16 / 32 / 48 / 64
07	00000111	Instrument ID = Kawai K3	
20	00010000	Version ID = OS ver. 2.0	
d1	0ddddd	Data Bytes ³⁾	
..		
dn	0ddddd		
xx	0xxxxxxx	Checksum ⁴⁾	
F7	11110111	End SysEx	

Remarks:

¹⁾ The 'Device ID' byte is equal to a number of active MIDI channel (00h for channel Nr. 1, 01h for channel Nr. 2 etc.) for both received and transmitted messages. For messages sent to SAVVY, universal ID 127 can also be set – "Universal ID" message will be always recognized independently on the active MIDI channel number.

²⁾ The 'Command' byte specifies the message type i.e. the SAVVY activity after the whole SysEx message is received – see next chapters.

³⁾ Number of databytes and their structure is variable in dependence on 'Command' byte. Length of the datablock can be 12, 78, 128 or 3 bytes.

⁴⁾ The 'Checksum' byte confirms the validity of the SysEx message. It must be calculated as 7-bit complement of the sum of bytes from 'Model ID' to 'Data Bytes'. By other words, seven-bit sum of bytes from the 'Model ID' to 'Checksum' must be equal to zero (for the 'Checksum' calculation see also chapter 2.2).

1.1 BULK DUMP LOAD SYSTEM PARAMETERS COMMAND

By transmitting of the "**Bulk Dump Load System Parameters**" message to the device, it is allowed to change the content of system parameters memory bank saved in the device's user memory. This type of SysEx message is also sent from the device as immediate response to received "**Bulk Dump Request System Parameters**" SysEx command (see chapter 1.4). When **DUMP** button on the device's panel is pressed, "**Bulk Dump Load System Parameters**" message is sent from the device as one part of stream of SysEx messages.

Value of "cc" (Command) byte is 16 (i.e. 10 hex) for "**Bulk Dump Load System Parameters**" command.

The data block "d1...dn" always contains 12 bytes with the following structure:

Byte	[hex]	[bin]	Range [dec]	Parameter
d1	xx	0xxxxxxx	0 ~ 15	Global Parameter: MIDI Channel
d2	00	00000000	0 ¹⁾	not used
d3	00	00000000	0 ²⁾	not used
d4	xx	00f00cba		Inst → Ctrl Data Transfer Parameters:
			a: 0 ~ 1	Select Device ID for Bulk Dump
			b: 0 ~ 1	Send All CCs (Tone Change)
			c: 0 ~ 1	Send One CC (Parameter Change)
			f: 0 ~ 1	Send Manual Tone Slct as Pgm Chng



Byte	[hex]	[bin]	Range [dec]	Parameter
d5	xx	000e0cba		Ctrl → Inst Data Transfer Parameters:
			a: 0 ~ 1	Cache Modifications in Edit Buffer
			b: 0 ~ 1	Cache Macro Settings in Edit Buffer
			c: 0 ~ 1	Cache Random Setting in Edit Buffer
			e: 0 ~ 1	Accept Pgm Chng from Ctrl
d6	0x	0000dcba		Global Parameters:
			a: 0 ~ 1	MIDI Errors Auto Reset
			b: 0 ~ 1	Remember Last Tone
			c: 0 ~ 1	Tone Number Format
			d: 0 ~ 1	Use Bank Select Command
d7	00	00000000	0 ¹⁾	not used
d8	00	00000000	0 ¹⁾	not used
d9	00	00000000	0 ¹⁾	not used
d10	00	00000000	0 ¹⁾	not used
d11	00	00000000	0 ¹⁾	not used
d12	0x	0000xxxx	0 ~ 15	Global Parameter: Display Brightness

Remarks:

¹⁾ These bytes must be always equal to 0! If not, the SAVVY will not work correctly.

1.2 BULK DUMP LOAD INSTRUMENT PARAMETERS COMMAND

By transmitting of the "Bulk Dump Load Instrument Parameters" message to the device, it is allowed to change the content of instrument parameters memory bank saved in the device's user memory. This type of SysEx message is also sent from the device as immediate response to received "Bulk Dump Request Instrument Parameters" SysEx command (see chapter 1.4). When DUMP button on the device's panel is pressed, "Bulk Dump Load Instrument Parameters" message is sent from the device as one part of stream of SysEx messages.

Value of "cc" (Command) byte is 32 (i.e 20 hex) for "Bulk Dump Load Instrument Parameters" command.

The data block "d1...dn" always contains 78 bytes with the following structure:

Byte	[hex]	[bin]	Range [dec]	CC Assignment to a Parameter
d1	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	OSC-1 WAVE SELECT
d2	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	OSC-1 RANGE
d3	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	PORTAMENTO SPEED
d4	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	OSC BALANCE
d5	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	PITCH BEND
d6	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	AUTO BEND
d7	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	OSC-2 WAVE SELECT
d8	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	OSC-2 COARSE
d9	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	OSC-2 FINE
d10	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCF CUTOFF
d11	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCF RESONANCE
d12	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	LOW CUT (HPF)
d13	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCF ENV
d14	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCF ATTACK
d15	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCF DECAY
d16	7F	01111111	127 ²⁾	not used
d17	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCF SUSTAIN
d18	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCF RELEASE
d19	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCA LEVEL
d20	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCA ATTACK
d21	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCA DECAY
d22	7F	01111111	127 ²⁾	not used
d23	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCA SUSTAIN
d24	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VCA RELEASE
d25	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	LFO SHAPE
d26	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	LFO SPEED



Byte	[hex]	[bin]	Range [dec]	CC Assignment to a Parameter
d27	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	LFO DELAY
d28	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	LFO OSC
d29	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	LFO VCF
d30	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	LFO VCA
d31	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VELOCITY VCF
d32	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	VELOCITY VCA
d33	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	PRESURE OSC-BALANCE
d34	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	PRESURE VCF
d35	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	PRESURE VCA
d36	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	PRESURE LFO-OSC
d37	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	KCV VCF
d38	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	KCV VC
d39	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	CHORUS
d40	7F	01111111	127 ²⁾	not used
d41	7F	01111111	127 ²⁾	not used
d42	7F	01111111	127 ²⁾	not used
d43	7F	01111111	127 ²⁾	not used
d44	7F	01111111	127 ²⁾	not used
d45	7F	01111111	127 ²⁾	not used
d46	7F	01111111	127 ²⁾	not used
d47	7F	01111111	127 ²⁾	not used
d48	7F	01111111	127 ²⁾	not used
d49	7F	01111111	127 ²⁾	not used
d50	7F	01111111	127 ²⁾	not used
d51	7F	01111111	127 ²⁾	not used
d52	7F	01111111	127 ²⁾	not used
d53	7F	01111111	127 ²⁾	not used
d54	7F	01111111	127 ²⁾	not used
d55	7F	01111111	127 ²⁾	not used
d56	7F	01111111	127 ²⁾	not used
d57	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Modifier: MOD RATE
d58	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Modifier: MOD DEPTH
d59	7F	01111111	127 ²⁾	not used
d60	7F	01111111	127 ²⁾	not used
d61	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Modifier: ENV TIME
d62	7F	01111111	127 ²⁾	not used
d63	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Macro: ENV ATTACK TIME
d64	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Macro: ENV DECAY TIME
d65	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Macro: ENV SUSTAIN LEVEL
d66	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Macro: ENV RELEASE TIME
d67	7F	01111111	127 ²⁾	not used
d68	7F	01111111	127 ²⁾	not used
d69	7F	01111111	127 ²⁾	not used
d70	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Macro: SET USER WAVE
d71	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	RANDOM FUNCTION
d72	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Wave: USER WAVE SELECTOR
d73	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Wave: INCREMENT / DECREMENT ODD HARMONICS
d74	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Wave: INCREMENT / DECREMENT EVEN HARMONICS
d75	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Wave: SLOPE ODD HARMONICS
d76	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Wave: SLOPE EVEN HARMONICS
d77	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Wave: INVERT HARMONICS
d78	xx	0xxxxxxxx	0 ~ 126 / 127 ¹⁾	Wave: COMPARE

Remarks:

¹⁾ Values 0 to 126 assign corresponding CC number to the parameter, value 127 means that no CC is assigned to the parameter.

²⁾ These bytes must be always equal to 127! If not, the SAVVY will not work correctly.

1.3 BULK DUMP LOAD TONE DATA COMMAND

By transmitting of the "**Bulk Dump Load Tone Data**" message to the device, it is allowed to change the content of one part of tone data memory bank saved in the device's user memory. This type of SysEx message is also sent from the device as immediate response to received "**Bulk Dump Request Tone Data**" SysEx command (see chapter 1.4). When **DUMP** button on the device's panel is pressed, "**Bulk Dump Load Tone Data**" messages are sent from the device for each of stored tones as 128 parts of stream of SysEx messages.

Value of "**cc**" (Command) byte is 48 (i.e 30 hex) for "**Bulk Dump Load Tone Data**" command.

The data block "**d1...dn**" always contains 128 bytes with the following structure:

Byte	[hex]	[bin]	Range	Tone Parameter
d1	xx	000000xx	0 ~ 2	BANK NUMBER ¹⁾
d2	xx	0xxxxxxx	0 ~ 127	TONE NUMBER ²⁾
d3	xx	00xxxxxx	0 ~ 33	OSC-1 WAVE SELECT
d4	0x	000000xx	0 ~ 2	OSC-1 RANGE
d5	xx	0xxxxxxx	0 ~ 99	PORTAMENTO SPEED
d6	xx	000xxxxx	0 ~ 30	OSC BALANCE
d7	0x	00000xxx	1 ~ 7	PITCH BEND
d8	xx	00xxxxxx	0 ~ 62	AUTO BEND
d9	xx	00xxxxxx	0 ~ 33	OSC-2 WAVE SELECT
d10	xx	00xxxxxx	0 ~ 48	OSC-2 COARSE
d11	xx	000xxxxx	0 ~ 20	OSC-2 FINE
d12	xx	0xxxxxxx	0 ~ 99	VCF CUTOFF
d13	xx	000xxxxx	0 ~ 31	VCF RESONANCE
d14	xx	000xxxxx	0 ~ 31	LOW CUT (HPF)
d15	xx	000xxxxx	0 ~ 31	VCF ENV
d16	xx	000xxxxx	0 ~ 31	VCF ATTACK
d17	xx	000xxxxx	0 ~ 31	VCF DECAY
d18	00	00000000	0 ³⁾	not used
d19	xx	000xxxxx	0 ~ 31	VCF SUSTAIN
d20	xx	000xxxxx	0 ~ 31	VCF RELEASE
d21	xx	000xxxxx	0 ~ 31	VCA LEVEL
d22	xx	000xxxxx	0 ~ 31	VCA ATTACK
d23	xx	000xxxxx	0 ~ 31	VCA DECAY
d24	00	00000000	0 ³⁾	not used
d25	xx	000xxxxx	0 ~ 31	VCA SUSTAIN
d26	xx	000xxxxx	0 ~ 31	VCA RELEASE
d27	0x	00000xxx	1 ~ 7	LFO SHAPE
d28	xx	0xxxxxxx	0 ~ 99	LFO SPEED
d29	xx	000xxxxx	0 ~ 31	LFO DELAY
d30	xx	000xxxxx	0 ~ 31	LFO OSC
d31	xx	000xxxxx	0 ~ 31	LFO VCF
d32	xx	000xxxxx	0 ~ 31	LFO VCA
d33	0x	0000xxxx	0 ~ 15	VELOCITY VCF
d34	0x	0000xxxx	0 ~ 15	VELOCITY VCA
d35	0x	0000xxxx	0 ~ 15	PRESURE OSC-BALANCE
d36	0x	0000xxxx	0 ~ 15	PRESURE VCF
d37	0x	0000xxxx	0 ~ 15	PRESURE VCA
d38	0x	0000xxxx	0 ~ 15	PRESURE LFO-OSC
d39	xx	000xxxxx	0 ~ 30	KCV VCF
d40	xx	000xxxxx	0 ~ 30	KCV VCA
d41	0x	00000xxx	0 ~ 7	CHORUS
d42	0x	0000000x	0 ~ 1	PORTAMENTO SWITCH
d43	0x	0000000x	0 ~ 1	MONO SWITCH
d44	xx	00xxxxxx	0 ~ 39	INCREMENT KNOB ASSIGN
d45	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR1)
d46	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR2)
d47	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR3)
d48	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR4)

Byte	[hex]	[bin]	Range	Tone Parameter
d49	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR5)
d50	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR6)
d51	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR7)
d52	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR8)
d53	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR9)
d54	xx	0xxxxxxx	32 ~ 127 ⁵⁾	TONE NAME (CHR10)
d55	40	01000000	64 ⁴⁾	not used
d56	40	01000000	64 ⁴⁾	not used
d57	40	01000000	64 ⁴⁾	not used
d58	40	01000000	64 ⁴⁾	not used
d59	xx	0xxxxxxx	0 ~ 127	Modifier: MOD RATE
d60	xx	0xxxxxxx	0 ~ 127	Modifier: MOD DEPTH
d61	40	01000000	64 ⁴⁾	not used
d62	40	01000000	64 ⁴⁾	not used
d63	xx	0xxxxxxx	0 ~ 127	Modifier: ENV TIME
d64	40	01000000	64 ⁴⁾	not used
d65	xx	0hhhhhhh	0 ~ 127	WAVE Harmonics-1 Nr. (lower 7 bits)
d66	xx	0h011111	h: 0 ~ 1 l: 0 ~ 31	WAVE Harmonics-1 Nr. (highest bit) WAVE Harmonics-1 Intensity
d67	xx	0hhhhhhh	0 ~ 127	WAVE Harmonics-2 Nr. (lower 7 bits)
d68	xx	0h011111	h: 0 ~ 1 l: 0 ~ 31	WAVE Harmonics-2 Nr. (highest bit) WAVE Harmonics-2 Intensity
d69	xx	0hhhhhhh	0 ~ 127	WAVE Harmonics-3 Nr. (lower 7 bits)
d70	xx	0h011111	h: 0 ~ 1 l: 0 ~ 31	WAVE Harmonics-3 Nr. (highest bit) WAVE Harmonics-3 Intensity
etc. up to				
d125	xx	0hhhhhhh	0 ~ 127	WAVE Harmonics-31 Nr. (lower 7 bits)
d126	xx	0h011111	h: 0 ~ 1 l: 0 ~ 31	WAVE Harmonics-31 Nr. (highest bit) WAVE Harmonics-31 Intensity
d127	xx	0hhhhhhh	0 ~ 127	WAVE Harmonics-32 Nr. (lower 7 bits)
d128	xx	0h011111	h: 0 ~ 1 l: 0 ~ 31	WAVE Harmonics-32 Nr. (highest bit) WAVE Harmonics-32 Intensity

Remarks:

- ¹⁾ The 'Bank Number' byte specifies what tone data memory bank will be affected by the SysEx message.
- ²⁾ The 'Tone Number' byte specifies what part of selected tone data memory bank (i.e. what tone number) will be affected by the SysEx message.
- ³⁾ These bytes must be always equal to zero! If not, the SAVVY will not work correctly.
- ⁴⁾ These bytes must be always equal to 64! If not, the SAVVY will not work correctly.
- ⁵⁾ All ASCII characters with codes 32 to 127 can be used.

1.4 BULK DUMP REQUEST COMMAND

When the "Bulk Dump Request" SysEx message is sent to the device, the device responds immediately with "Bulk Dump Load" message (see above). This message contains data from requested memory bank saved in the device's user memory.

Value of "cc" (Command) byte is 64 (i.e 40 hex) for "Bulk Dump Request" command.

The data block "d1...dn" always contains 3 bytes the following structure:

Byte	[hex]	[bin]	Range	Meaning
d1	01	00000001		Sub-command: Bulk Dump Request
d2	xx	00xxxxxx	16 / 32 / 48 ~ 50 ¹⁾	Bank Type
d3	xx	0xxxxxxx	0 or 0 ~ 127 ²⁾	Bank Part Number

Remarks:

¹⁾ The 'Bank Type' byte specifies the memory area for the command processing: 16 (i.e 10 hex) is for System Parameters Bank, 32 (i.e 20 hex) is for Instrument Parameters Bank and 48 ~ 50 (i.e 30 hex to 32 hex) is for a Tone Data Bank Nr. 1 to 3.

²⁾ If Bank Type byte is 48 to 50 (i.e. Tone Data Bank Nr. 1 to 3), the 'Bank Part Number' byte specifies number of requested tone in the selected bank exactly (0 to 127). If 'Bank Type' byte is 16 or 32, the 'Bank Part Number' byte must be always equal to 0.

1.5 BULK DUMP INITIALIZE COMMAND

When the "Bulk Dump Initialize" SysEx message is sent to the device, data in requested memory bank in the device's user memory are rewritten with default "factory reset" data. Original data are lost!

Value of "cc" (Command) byte is 64 (i.e 40 hex) for "Bulk Dump Initialize" command.

The data block "d1...dn" always contains 3 bytes the following structure:

Byte	[hex]	[bin]	Range	Meaning
d1	00	00000000		Sub-command: Initialize
d2	xx	00xxxxxx	16 / 32 / 48 ~ 50 ¹⁾	Bank Type
d3	xx	0xxxxxxx	0 or 0 ~ 127 ²⁾	Bank Part Number

Remarks:

¹⁾ The 'Bank Type' byte specifies the memory area for the command processing: 16 (i.e 10 hex) is for System Parameters Bank, 32 (i.e 20 hex) is for Instrument Parameters Bank and 48 ~ 50 (i.e 30 hex to 32 hex) is for a Tone Data Bank Nr. 1 to 3.

²⁾ If Bank Type byte is 48 to 50 (i.e. Tone Data Bank Nr. 1 to 3), the 'Bank Part Number' byte specifies number of requested tone in the selected bank exactly (0 to 127). If 'Bank Type' byte is 16 or 32, the 'Bank Part Number' byte must be always equal to 0.

2 SYSEX MESSAGES CREATING

2.1 SYSEX MESSAGES GENERATORS

As a support for the users we have made special software generators to create any SysEx messages to control the SAVVY editor. Usage of these generators is very easy for any user. Please see Manual Supplement for detailed description of SysEx Messages Generator.

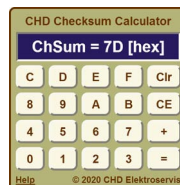
2.2 CHECKSUM CALCULATOR

If you want to create a SysEx message yourself, you need to calculate the 'Checksum' byte. This is difficult for most musicians because calculation with hexadecimal / binary numbers is necessary. For easy calculation of the checksum, special software **Checksum Calculator** is prepared.

The Checksum Calculator is based on Java scripts so it can run on any computer with web browser (Windows, OSX, etc.). Note that scripts and ActiveX elements must be enabled in the web browser for proper function of the calculator.

The Checksum Calculator is available at our website (www.chd-el.cz) on Support page.

The Checksum Calculator works on-line or it can be downloaded to your computer and then launched from it.





Tone Parameters Editor & Controller
Model TPE-1 Nr. 8-361 / Bios v. 1.00 / OS Nr. 007 v. 2.0
Document: 8361100-00720_sysex

Manufacturer:
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