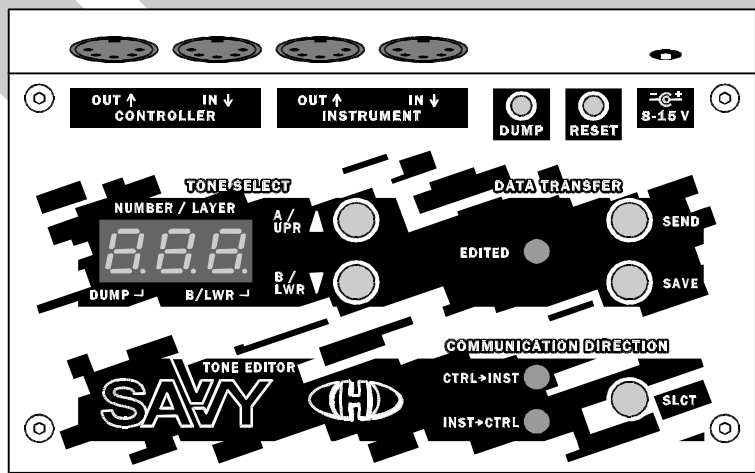


SAVVY

Tone Parameters Editor & Controller



Manual Supplement
Yamaha V50
OS 009 ver. 2.0



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1 FEATURES

Supported instruments: Yamaha V50.

Number of tone memories: 256 (two memory banks).

Individual tone parameters (115x): most of the Yamaha V50 tone parameters assigned to MIDI CCs.

Modifiers (6x): MOD RATE, MOD DEPTH, BRILLIANCE, MODULATOR KBD SCALING LEVEL, CARRIER ENV TIME, MODULATOR ENV TIME

Macro (5x): ENV ATTACK TIME, ENV DECAY TIME, ENV SUSTAIN LEVEL, ENV RELEASE TIME, PITCH ENV TIME

Random functions (15x): CARRIER – Light / Full, MODULATOR – Light / Full, OPERATOR 1 ~ 4, PITCH EG, ENV CARRIER / MODULATOR, DSP, FX, MODE, ALL

2 PREPARE THE INSTRUMENT

To use SAVVY with your Yamaha **V50** instrument, you have to set following MIDI functions:

- 1) Press the **MIDI** button on the instrument front panel to enter the MIDI utilities setting.
- 2) Press the button below "ChInfo" label on the display and then the button below "**Midi**" function.
- 3) Set "**on**" value¹ of the function.
- 4) Press the button below "**Basic Rch**" function and set ¹ the "**1**" value².
- 5) Press the button below "**Basic Tch**" function and set ¹ the "**1**" value³.
- 6) Press the button below "**EXIT**" label - the display returns to MIDI utility menu .
- 7) Press the button below "**Exclusive**" label on display and then the button below "**Device No.**" function.
- 8) Set the "**1**" value¹ of the function⁴.
- 9) Press the button below "**EXIT**" label - the display returns to MIDI utility menu .
- 10) Press the button below "**Cond**" label on display and then the button below "**D. Entry Assign**" function.
- 11) Set "**6**" value¹ of the function⁵.
- 12) Press the **SINGLE / PLAY** button. The instrument returns to normal working mode.

The values of the functions are stored in instrument's memory if set as described above.

SAVVY always uses the edit buffer of the Yamaha V50 instrument, so no tone in instrument's internal memory is rewritten during the SAVVY operation. The MEMORY PROTECT function of the instrument does not need to be deactivated during the SAVVY operation thus.

¹ The value can be set by **DATA ENTRY** slider or by **[-1]** and **[+1]** buttons or by numeric buttons **[0]** to **[9]**.

² SAVVY uses MIDI channel Nr. 1 as a default for data receiving after factory reset (see System Parameters table). It can be changed by the user anytime.

³ SAVVY uses MIDI channel Nr. 1 as a default for data transmitting after factory reset (see System Parameters table). It can be changed by the user anytime.

⁴ The "Device No." used by SAVVY is the same as number of receiving / transmitting MIDI channel.

⁵ The V50 transmits MIDI CC if DATA ENTRY slider is used. It is recommended to assign a MIDI CC number not used by SAVVY (see table below) so that no conflict occurs in MIDI communication. CC #6 is recommended for SAVVY factory setting.



3 INSTRUMENT PARAMETERS – MIDI CC ASSIGNMENT

- **Individual tone parameters** - MIDI CCs assigned to individual tone parameters control.
- **Modifiers** - MIDI CCs assigned to tone modifications controls (+/- offsets), that affect more tone parameters simultaneously accordingly to the fixed algorithms. In the middle position (i.e. value 64), the tone is not affected
- **Macros** – MIDI CCs assigned to macro functions that simplify control of more tone parameters simultaneously (e.g simplified ADSR envelope, etc.).
- **Random functions** - MIDI CC assigned to intelligent random functions set random values of selected tone parameters.

All changes of individual tone parameters, Modifiers and results of Macro and Random functions can be saved in SAVVY's tone memories.

The following table shows factory assigned MIDI CCs numbers, however the assigned MIDI CCs are user definable⁶ and can be changed by user.

INDIVIDUAL TONE PARAMETERS			
Parameter Name	CC Nr.	Parameter Name	CC Nr.
OP1: ATTACK RATE	18	OP2: OSC FREQUENCY FINE	48
OP1: DECAY 1 RATE	19	OP2: OSC FIX	46
OP1: DECAY 2 RATE	20	OP2: OSC FIX RANGE	47
OP1: RELEASE RATE	21	OP2: FIX RANGE MODE HI / LO	none
OP1: DECAY 1 LEVEL	22	OP2: OSC WAVE	49
OP1: KEYBOARD SCALING LEVEL	23	OP2: ENV GEN SHIFT	none
OP1: KEYBOARD SCALING RATE	24	OP3: ATTACK RATE	50
OP1: EG BIAS SENS	none	OP3: DECAY 1 RATE	51
OP1: AMPLITUDE MOD ENABLE	25	OP3: DECAY 2 RATE	52
OP1: KEY VELOCITY	26	OP3: RELEASE RATE	53
OP1: OUTPUT LEVEL	27	OP3: DECAY 1 LEVEL	54
OP1: OSC FREQUENCY	28	OP3: KEYBOARD SCALING LEVEL	55
OP1: DETUNE	none	OP3: KEYBOARD SCALING RATE	56
OP1: OSC FREQUENCY FINE	31	OP3: EG BIAS SENS	none
OP1: OSC FIX	29	OP3: AMPLITUDE MOD ENABLE	57
OP1: OSC FIX RANGE	30	OP3: KEY VELOCITY	58
OP1: FIX RANGE MODE HI / LO	none	OP3: OUTPUT LEVEL	59
OP1: OSC WAVE	33	OP3: OSC FREQUENCY	60
OP2: ATTACK RATE	34	OP3: DETUNE	none
OP2: DECAY 1 RATE	35	OP3: OSC FREQUENCY FINE	63
OP2: DECAY 2 RATE	36	OP3: OSC FIX	61
OP2: RELEASE RATE	37	OP3: OSC FIX RANGE	62
OP2: DECAY 1 LEVEL	39	OP3: FIX RANGE MODE HI / LO	none
OP2: KEYBOARD SCALING LEVEL	40	OP3: OSC WAVE	67
OP2: KEYBOARD SCALING RATE	41	OP3: ENV GEN SHIFT	none
OP2: EG BIAS SENS	none	OP4: ATTACK RATE	68
OP2: AMPLITUDE MOD ENABLE	42	OP4: DECAY 1 RATE	69
OP2: KEY VELOCITY	43	OP4: DECAY 2 RATE	70
OP2: OUTPUT LEVEL	44	OP4: RELEASE RATE	71
OP2: OSC FREQUENCY	45	OP4: DECAY 1 LEVEL	72
OP2: DETUNE	none	OP4: KEYBOARD SCALING LEVEL	73

⁶ To see how to change the assigned MIDI CCs or make new user map see chapter 5.



INDIVIDUAL TONE PARAMETERS - CONTINUE

Parameter Name	CC Nr.	Parameter Name	CC Nr.
OP4: KEYBOARD SCALING RATE	74	PORTAMENTO TIME	none
OP4: EG BIAS SENS	none	MOD WHEEL PITCH MOD RANGE	87
OP4: AMPLITUDE MOD ENABLE	75	MOD WHEEL AMPLITUDE MOD RANGE	88
OP4: KEY VELOCITY	76	BREATH CTRL PITCH MOD RNG	none
OP4: OUTPUT LEVEL	77	BREATH CTRL AMPLIT MOD RNG	none
OP4: OSC FREQUENCY	78	BREATH CTRL PITCH BIAS RNG	none
OP4: DETUNE	none	BREATH CTRL EG BIAS RNG	none
OP4: OSC FREQUENCY FINE	81	PITCH EG RATE 1	106
OP4: OSC FIX	79	PITCH EG RATE 2	107
OP4: OSC FIX RANGE	80	PITCH EG RATE 3	108
OP4: FIX RANGE MODE HI / LO	none	PITCH EG LEVEL 1	109
OP4: OSC WAVE	82	PITCH EG LEVEL 2	110
OP4: ENV GEN SHIFT	none	PITCH EG LEVEL 3	111
ALGORITHM	83	AFTERTOUCH PITCH	none
FEEDBACK LEVEL	84	AFTERTOUCH AMPLI	none
LFO SPEED	13	AFTERTOUCH PITCH BIAS	none
LFO DELAY	14	AFTERTOUCH EG BIAS	none
LFO PITCH MODULATION DEPTH	16	LEVEL SCALING SIGN (OP 1, 2, 3, 4)	93
LFO AMPLITUDE MODULATION	17	REVERB RATE	103
LFO SYNC	15	EFFECT SEL	66
LFO WAVE	12	EFFECT BALANCE	104
PITCH MOD SENSITIVITY	85	EFFECT OUT LEVEL	105
AMPLITUDE MOD SENSITIVITY	86	EFFECT STEREO MIX	none
TRANSPOSE	102	EFFECT PARAM 1	117
PLAY MODE POLY / MONO	none	EFFECT PARAM 2	118
PITCH BEND RANGE	9	EFFECT PARAM 3	119
PORTAMENTO MODE	none		

MODIFIERS

Modifier Name	CC Nr.	Modifier Name	CC Nr.
MODULATION RATE	95	MODULATOR KEYFOLLOW ⁷	91
MODULATION DEPTH	94	CARRIER ENV TIME	90
BRILLIANCE ⁷	92	MODULATOR ENV TIME ⁷	89

MACROS

Macro Name	CC Nr.	Macro Name	CC Nr.
ENV ATTACK TIME	112	ENV RELEASE TIME	115
ENV DECAY TIME	113	PITCH ENV TIME	116
ENV SUSTAIN LEVEL	114		

RANDOM FUNCTIONS

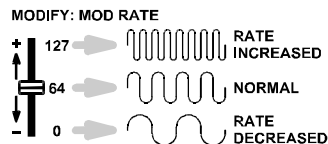
Random Setting Name	CC Nr.
CARRIERS / MODULATORS / ENV / FX / MODE ...	3

⁷ These modifiers have no effect if ALGORITHM tone parameter is 8 (additive algorithm without modulators).

3.1 MODIFIERS

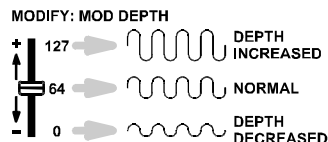
MOD RATE

MOD RATE is a new performance parameter. This modifier changes the rate of the **vibrato**, **tremolo**, **growl**, and **LFO delay** effects.



MOD DEPTH

MOD DEPTH is a new performance parameter. This modifier changes the depth of the **vibrato**, **tremolo** or **growl** effects. Also **modulation wheel** range is affected.

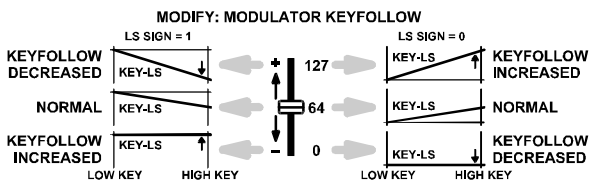


BRILLIANCE

BRILLIANCE is a new performance parameter. This modifier affects all modulators (in dependence on detected algorithm) – it changes the **brilliance / sharpness** of the tone.

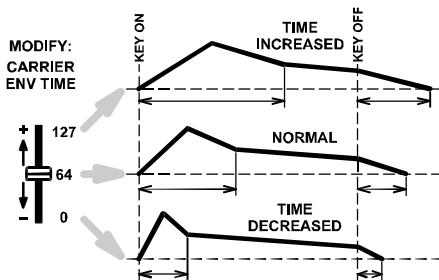
MODULATOR KEYFOLLOW

MODULATOR KEYFOLLOW is a new performance parameter. This modifier adjusts **keyboard scaling** level for all **modulators** (in dependence on detected algorithm). Tone parameter LS SIGN affects slope orientation (see picture).



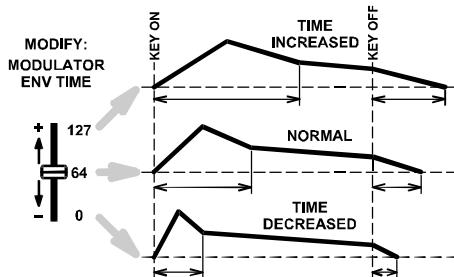
CARRIER ENV TIME

CARRIER ENV TIME is a new performance parameter. This modifier offsets all **time segments** of all **carrier's Envelope Generators** with single MIDI CC, while preserving all other tone settings (see picture below). The original tone color can be used with various lengths of envelope from short percussive to long evolving pad.



MODULATOR ENV TIME

MODULATOR ENV TIME is a new performance parameter. This modifier offsets all **time segments** of all **modulator's Envelope Generators** with single MIDI CC, while preserving all other tone settings (see picture below). The original tone color can be used with various lengths of envelope from short percussive to long evolving pad.



3.2 MACROS

ENV ATTACK TIME

Yamaha V50 instrument uses atypic (AR, D1R, D1L, D2R, RR) envelope generators for operators. The ENV ATTACK TIME macro emulates **Attack segment** of traditional 4-segment (ADSR) envelope. Original tone parameters **ATTACK RATE** of **all operators** are simultaneously controlled by one CC as an **ATTACK TIME**.

ENV DECAY TIME

The ENV DECAY TIME macro emulates **Decay segment** of traditional 4-segment (ADSR) envelope. Original tone parameters **DECAY 1 RATE** of **all operators** are simultaneously controlled by one CC as a **DECAY TIME**.

ENV SUSTAIN LEVEL

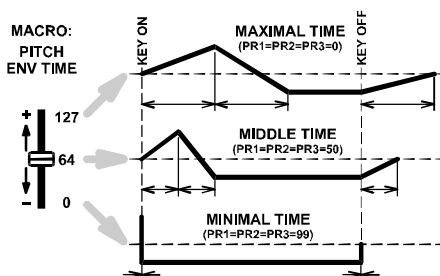
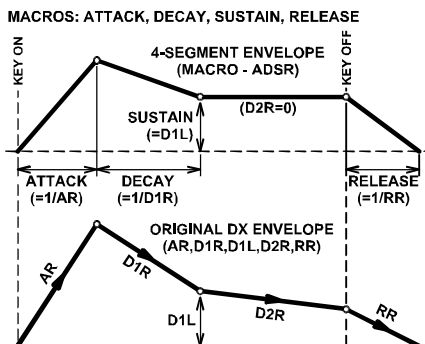
The ENV SUSTAIN LEVEL macro emulates **Sustain segment** of traditional 4-segment (ADSR) envelope. Original tone parameters **DECAY 1 LEVEL** of **all operators** are simultaneously controlled by one CC as a **SUSTAIN LEVEL** and original tone parameters **DECAY 2 RATE** of **all operators** are set to zero (i.e. **SUSTAIN LEVEL** is constant).

ENV RELEASE TIME

The ENV RELEASE TIME macro emulates **Release segment** of traditional 4-segment (ADSR) envelope. Original tone parameters **RELEASE RATE** of **all operators** are simultaneously controlled by one CC as a **RELEASE time**.

PITCH ENV TIME

PITCH ENV TIME is a new performance parameter. This modifier changes all **time segments** (PR1, PR2 and PR3) of the Pitch Envelope Generator. Pitch slope is the same for PR1, PR2 and PR3 segments.





3.3 RANDOM FUNCTIONS

The random functions or “Intelligent random generator” use MIDI CC #3⁸. There are different random algorithms available as described in the table below:

VALUES OF CC ASSIGNED TO RANDOM SETTING FUNCTION CONTROL		
CC Value	Function	Description
0 ~ 7	n/a	Not used
8 ~ 15	CARRIER(s) light	Limited number and range of all carrier parameters without pitch / amplitude modulation effects for more predictable results
16 ~ 23	CARRIER(s) full	All available carrier parameters in full range, including modulation for more excentric tones and sound effect
24 ~ 31	MODULATOR(s) light	Limited number and range of all modulator parameters ⁹ without pitch / amplitude modulation effects for more predictable results
32 ~ 39	MODULATOR(s) full	All available modulators parameters ⁹ in full range, including modulation for more excentric tones and sound effect
40 ~ 47	OPERATOR 1	All parameters of the operator Nr. 1 random setting
48 ~ 55	OPERATOR 2	All parameters of the operator Nr. 2 random setting
56 ~ 63	OPERATOR 3	All parameters of the operator Nr. 3 random setting
64 ~ 71	OPERATOR 4	All parameters of the operator Nr. 4 random setting
72 ~ 79	PITCH EG	Pitch envelope generator random setting
80 ~ 87	ENV CARRIER(s)	All carrier envelopes (all parameters) random)
88 ~ 95	ENV MODULATOR(s)	All modulator envelopes (all parameters) random) ⁹
96 ~ 103	DSP	DSP effect type and all its parameters
104 ~ 111	FX	LFO, PORTAMENTO and REVERB random
112 ~ 119	MODE	Algorithm, Feedback
120 ~ 127	ALL	Full tone random for sound experimenting

It is recommended to assign push buttons on your hardware MIDI controller with the different MIDI CC #3 values as described in the table above.

⁸ Factory preset value. To see how to change number of assigned MIDI CC see chapter 5.2.

⁹ This random function has no effect if ALGORITHM tone parameter is 8 (additive algorithm without modulators).



4 SYSTEM PARAMETERS

System Parameters define basic functions of SAVVY (MIDI channel for communication, MIDI data flow processing, tone number display format, display brightness, etc.).

SYSTEM PARAMETERS				
Parameter			Factory Default ¹⁰	
Name	Range	Description	Value	Description
Global Parameters				
MIDI Channel	0 ~ 15	0: Chnl 1 ... 15: Chnl 16	0	MIDI Channel Nr. 1
Use Bank Select Command	0 ~ 1	0: No / 1: Yes	1	Yes
MIDI Errors Auto Reset	0 ~ 1	0: Off / 1: On	1	On
Remember last tone	0 ~ 1	0: No / 1: Yes	1	Yes
Tone Number Format	0 ~ 1	0: 0 to 255 / 1: 1 to 256	1	Numbers 1 to 256
Display Brightness	0 ~ 15	0: min ... 15: max	15	Maximal brightness
Inst → Ctrl Data Transfer				
Select Device ID for Bulk Dump	0 ~ 1	0: Universal / 1: MIDI Chnl Nr.	0	Universal ID Number
Send All CCs (Tone Change)	0 ~ 1	0: No / 1: Yes	1	Yes
Send One CC (Parameter Change)	0 ~ 1	0: No / 1: Yes	1	Yes
Send Manual Tone Slct as Pgm Chng	0 ~ 1	0: No / 1: Yes	1	Yes
Ctrl → Inst Data Transfer				
Cache Modifications in Edit Buffer	0 ~ 1	0: No / 1: Yes	1	Yes
Cache Macro Settings in Edit Buffer	0 ~ 1	0: No / 1: Yes	1	Yes
Cache Random Setting in Edit Buffer	0 ~ 1	0: No / 1: Yes	1	Yes
Accept Pgm Chng from Ctrl	0 ~ 1	0: No / 1: Yes	1	Yes

4.1 GLOBAL PARAMETERS

4.1.1 MIDI Channel

This parameter sets MIDI channel used for the instrument control (**0 for channel 1, 1 for channel 2, etc. up to 15 for channel 16**). All MIDI Channel messages are received and transmitted on selected MIDI channel only. MIDI channel for the SAVVY editor must be the same as selected MIDI channel of the controlled instrument!

4.1.2 Use Bank Select (CC #32)

If the parameter is 1 (i.e. "**YES**"), SAVVY uses the **CC #32** as the **Bank Select LSB** command for communication between the controller / PC and SAVVY. The CC #32 then defines number of active tone memory bank (0 to 1).

If the parameter is 0 (i.e. "**NO**"), the CC #32 can be used as universal CC for setting of a tone parameter (see chapter 3).

4.1.3 MIDI Errors Auto Reset

If the parameter is 1 (i.e. "**ON**") and an error in MIDI communication occurs, the **communication is reset** and the device continues normal operation.

If the parameter is 0 (i.e. "**OFF**") and an error in MIDI communication occurs, the **device stops operation** and the error status it indicated.

¹⁰ Factory preset values are user editable. See chapter 5 for details..

4.1.4 Remember Last Tone

If the parameter is 1 (i.e. "YES"), SAVVY **remembers last selected tone number** after switching off (for next session).

If the parameter is 0 (i.e. "NO"), SAVVY always **starts with the first tone** number.

4.1.5 Tone Number Format

This parameter sets the displayed tone number format. It can be either **0** to **255** (parameter value is 0) or **1** to **256** (parameter value is 1).

4.1.6 Display Brightness

The parameter sets the display brightness (**0** for minimum, **15** for maximum).

4.2 INST → CTRL DATA TRANSFER PARAMETERS

4.2.1 Select Device ID for Bulk Dump

The parameter selects identification number of the SAVVY editor for both transmitted and received MIDI Bulk Dump SysEx Messages.

If the parameter is 1 (i.e. "MIDI Channel"), the Device ID number is the same as number of MIDI channel chosen for MIDI communication with the instrument (i.e. global parameter MIDI Channel).

If the parameter is 0 (i.e. "Universal ID Number"), the Device ID number is equal to 127. SysEx messages will be in such setting recognized by any SAVVY editor independently on selected MIDI channel number.

4.2.2 Send All CCs (Tone Change)

If the parameter is 1 (i.e. "YES"), the SAVVY editor **transmits all CCs** assigned to tone parameters **when tone number is selected / changed** (manually by button on front panel or by APR SysEx message or Program Change command from the instrument).

If the parameter is 0 (i.e. "NO"), **no CCs are transmitted after tone select / change**.

4.2.3 Send One CC (Parameter Change)

If the parameter is 1 (i.e. "YES"), the SAVVY editor **transmits MIDI CC** assigned to a tone parameter each time the **parameter is changed on the instrument** (by IPR SysEx message). If "Use Bank Select Command" parameter (see chapter 4.1.2) is "YES", the Bank Select LSB command (i.e. CC #32) is also sent.

If the parameter is 0 (i.e. "NO"), assigned **CC is not transmitted** after the parameter change.

4.2.4 Send Manual Tone Slct as Pgm Chng

If the parameter is 1 (i.e. "YES"), **Program Change** command is **sent to the controller / PC** each time the tone is changed manually (by buttons on SAVVY's front panel).

If the parameter is 0 (i.e. "NO"), **Program Change** command is **not transmitted**.

4.3 CTRL → INST DATA TRANSFER PARAMETERS

4.3.1 Cache Modifications in Edit Buffer

If the parameter is 1 (i.e. "YES"), any **change of tone** parameters made by a "Modifier" CCs are **sent to the instrument and remain in edit buffer** (so they can be saved together with the tone parameters in SAVVY's memory).

If the parameter is 0 (i.e. "NO"), the **changes** are only **sent to the instrument and not cached** in edit buffer.

4.3.2 Cache Macro Settings in Edit Buffer

If the parameter is 1 (i.e. "YES"), any **change of tone parameters** made by a "Macro" CC are **sent to the instrument and remain in edit buffer** (so they can be saved as a new tone parameters values in SAVVY's memory).

If the parameter is 0 (i.e. "NO"), the **changes are only sent** to the instrument and they are **not cached** in edit buffer.

4.3.3 Cache Random Setting in Edit Buffer

If the parameter is 1 (i.e. "YES"), **changes** of tone parameters generated by the "Random" CC are sent to the instrument and **remain in edit buffer** (so they can be saved as a new tone parameters values in SAVVY's memory).

If the parameter is 0 (i.e. "NO"), the **changes** are only sent to the instrument and they are **not cached**.

4.3.4 Accept Pgm Chng from Ctrl

If the parameter is 1 (i.e. "YES"), the editor **changes its tone** each time a **Program Change** command is received from the connected controller / PC. Number of newly selected tone bank conforms to value of the received Program Change command. If "Use Bank Select Command" parameter (see chapter 4.1.2) is "YES", the Bank Select LSB command (i.e. CC #32) is also accepted and active tone bank is also changed.

If the parameter is 0 (i.e. "NO"), **Program Change** command is **ignored** by the SAVVY.

5 SYSEX MESSAGES GENERATOR

As a support for the users we have made software generator to create System Exclusive messages to control the SAVVY editor. Any necessary SysEx message can be created with this generator without difficult calculating of binary or hexadecimal numbers.

The generator is based on Java scripts so it can run on any computer with web browser (Windows, OSX, etc.)¹¹. To send the generated commands you will also need a **utility to send the generated text**¹² as a MIDI SysEx dump (see chapter 6 for recommended software¹³).

Visit our website and download the “**syxgen_009-20_Yamaha-V50.zip**” archive for Yamaha V50 instrument. Expand the archive to a selected folder on your computer’s hard drive (i.e. “**index.html**”, “**00920_general.html**”, “**00920_instrument.html**”, “**00920_tone.html**” and “**00920_help.html**” files and “**media**” sub-folder).

To launch the SysEx messages generator, simply open the “**index.html**” file in your web browser (e.g. by clicking on the file icon). The generator type selector window opens.

Click on “**Go**” button to request either **System Parameters** ①, **Instrument Parameters** ② or **Tone Data** ③ SysEx message generator windows.

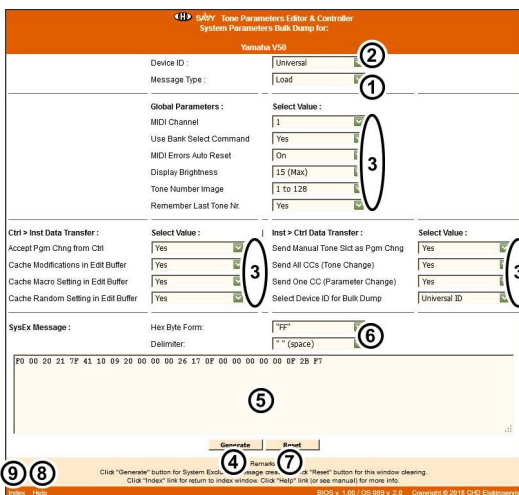


5.1 SYSTEM PARAMETERS WINDOW

5.1.1 Change the system parameters

To change / adjust the system parameters:

1. Select “**Load**” message type ①.
2. Select the “**Device ID**” ② (It is either the same number as active MIDI Channel Nr. or “**Universal**”¹⁴).
3. Select / adjust requested values of System parameters to be changed ③.
4. Click the “**Generate**” button ④.
5. The hexadecimal MIDI SysEx message is generated as a text in the “**SysEx Message**” field ⑤.
6. **Copy** the text in clipboard (CTRL+C) and **paste** (CTRL+V) to a MIDI Sysex software¹⁵.
7. Send the message to SAVVY¹⁶.
8. SAVVY starts operation with the new system parameters settings immediately, no reset is necessary.



¹¹ Note that scripts and ActiveX elements must be enabled in web browser for proper function of the generator.

¹² The generated format of the message is **text**. The text can not be saved as a *.syx or *.mid file directly, hence a text to SysEx utility is needed.

¹³ It is not necessary to use the recommended utility. The same function is provided by various DAW and MIDI SysEx softwares. For required text format and instructions check the documentation of your DAW/software.

¹⁴ “Universal” ID will be recognized by any SAVVY editor.

¹⁵ See Chapter 6.1.2 for recommended MIDI SysEx software.

¹⁶ SAVVY must be set in “**CTRL→INST**” communication direction.

5.1.2 Request the contents of system memory

To request the contents of System parameters memory for backup in your computer:

1. Select **"Request"** message type ①.
2. Select the **"Device ID"** ② (It is either the same number as active MIDI Channel Nr. or **"Universal"**¹⁷).
3. Click the **"Generate"** button ④.
4. The hexadecimal MIDI SysEx message is generated as a text in the **"SysEx Message"** field ⑤.
5. **Copy** the text in clipboard (CTRL+C) and **paste** (CTRL+V) in a MIDI Sysex software¹⁸.
6. Send the message to SAVVY¹⁹.
7. SAVVY responds immediately – it sends the System parameter settings as **"Load"** type SysEx message²⁰.
8. Now you can save the received message in your computer for further use.

5.1.3 Initialize data

To initialize the System data to factory default values:

1. Select **"Initialize"** message type ①.
2. Select the **"Device ID"** ② (It is either the same number as active MIDI Channel Nr. or **"Universal"**²¹).
3. Click the **"Generate"** button ④.
4. The hexadecimal MIDI SysEx message is generated as a text in the **"SysEx Message"** field ⑤.
5. **Copy** the text in clipboard (CTRL+C) and **paste** (CTRL+V) in a MIDI Sysex software²².
6. Send the message to SAVVY²³.
7. SAVVY starts operation with the initialized system settings immediately, no reset is necessary.

5.1.4 Other functions

Select **"Hex Byte Form"** and **"Delimiter"** character ⑥ as required for your MIDI SysEx software²⁴. Default setting of the generator is optimized for the recommended **Pocket MIDI** utility²⁵ (see Chapter 6). However some DAW or MIDI SysEx utilities require different format of the generated text message.

To clear the text field and return all values to their defaults, click the **"Reset"** button ⑦.

"Help" link ⑧ opens new window with brief help.

"Index" link ⑨ closes this window and returns to initial generator type selection window.

¹⁷ "Universal" ID will be recognized by any SAVVY editor.

¹⁸ See Chapter 6.1.3 for recommended MIDI SysEx software.

¹⁹ SAVVY must be set in **"CTRL→INST"** communication direction and your computer must be connected bi-directionally (both MIDI IN and OUT cables) with SAVVY.

²⁰ If you are using the recommended MIDI SysEx software, the message should be visible in the "MIDI In Monitor" window - see Chapter 6.1.3.

²¹ "Universal" ID will be recognized by any SAVVY editor.

²² See Chapter 6.1.2 for recommended MIDI SysEx software.

²³ SAVVY must be set in **"CTRL→INST"** communication direction.

²⁴ See the documentation of your DAW for required format.

²⁵ The default format is also compatible with Bome SendSX and various other softwares.

5.2 INSTRUMENT PARAMETERS WINDOW

5.2.1 Create / adjust the MIDI CC map

You can **create** your own user **MIDI CC map** in this generator window (e.g. to use your modern Virtual analogue synthesizer as a controller for your vintage instrument).

To create your own MIDI CC map:

1. Select **"Load"** message type **①**.
2. Select the **"Device ID"** **②** (It is either the same number as active MIDI Channel Nr. or **"Universal"**²⁶).
3. For each of tone parameter and functions, select / change the respective MIDI CC²⁷ Nr. as you need **③**.
4. Click the **"Generate"** button **④**.
5. The hexadecimal MIDI SysEx message is generated as a text in the **"SysEx Message"** field **⑤**.
6. **Copy** the text in clipboard (CTRL+C) and **paste** (CTRL+V) to a MIDI Sysex software²⁸.
7. Send the message to SAVVY²⁹.
8. SAVVY starts operation with the new user MIDI CC mapping immediately, no reset is necessary.

CHD SAVVY Tone Parameters Editor & Controller
Instrument Parameters Bank Dump Editor

Yamaha V50

Device ID: Universal **②**
Message Type: Load **①**

Tone Parameter Name	Assign CC Nr.	Tone Parameter Name	Assign CC Nr.	Tone Parameter Name	Assign CC Nr.
OP4 ATTACK RATE	68	OP3 DECAY 1 RATE	51	FO DELAY	14
OP4 DECAY 1 RATE	69	OP3 DECAY 2 RATE	52	FO PITCH MOD DEPTH	16
OP4 DECAY 2 RATE	70	OP3 RELEASE RATE	53	FO AMPLITUDE MOD DEPTH	17
OP4 RELEASE RATE	71	OP3 DECAY 1 LEVEL	54	FO SYNC	15
OP4 DECAY 1 LEVEL	72	OP3 ENV GEN SHIFT	None	FO WAVE	12
OP4 ENV GEN SHIFT	None	OP3 KEYBOARD SCALING LEVEL	55	TOCH MOD SENS	85
OP4 KEYBOARD SCALING LEVEL	73	OP3 KEYBOARD SCALING RATE	56	AMPLITUDE MOD SENS	86
OP4 KEYBOARD SCALING RATE	74	OP3 EG BIAS SENS	None	ANSPOSE	102
OP4 EG BIAS SENS	None	OP3 AMPLITUDE MOD ENABLE	57	AY MODE POLY / MONO	None
OP4 AMPLITUDE MOD ENABLE	75	OP3 KEY VELOCITY	58	CH BEND RANGE	9
OP4 KEY VELOCITY	76	OP3 OUTPUT LEVEL	59	RTAMENTO MODE	None
OP4 OUTPUT LEVEL	77	OP3 OSC FREQUENCY COARSE	60	RTAMENTO TIME	None
OP4 OSC FREQUENCY COARSE	78	OP3 OSC FREQUENCY FINE	63	D WHL PITCH MOD RANGE	87
OP4 OSC FREQUENCY FINE	81	OP3 OSC DETUNE	None	D WHL AMPLITUDE MOD RING	88
OP4 OSC DETUNE	None	OP3 OSC MODE	61	CTRL PITCH MOD RING	None
OP4 OSC MODE	79	OP3 OSC FIX RANGE	62	CTRL AMPLITUDE MOD RING	None
OP4 OSC FIX RANGE	80	OP3 OSC FIX RANGE MODE	None	CTRL PITCH BIAS RING	None
OP4 OSC FIX RANGE MODE	None	OP3 OSC WAVE	67	CTRL EG BIAS RING	None
OP4 OSC WAVE	82	OP1 ATTACK RATE	18	CH EG RATE 1	106
OP2 ATTACK RATE	34	OP1 DECAY 1 RATE	19	CH EG RATE 2	107
OP2 DECAY 1 RATE	35	OP1 DECAY 2 RATE	20	CH EG RATE 3	108
OP2 DECAY 2 RATE	36	OP1 RELEASE RATE	21	CH EG LEVEL 1	109
OP2 RELEASE RATE	37	OP1 DECAY 1 LEVEL	22	CH EG LEVEL 2	110
OP2 DECAY 1 LEVEL	39	OP1 KEYBOARD SCALING LEVEL	23	CH EG LEVEL 3	111
OP2 ENV GEN SHIFT	None	OP1 KEYBOARD SCALING RATE	24	VERB RATE	103
OP2 KEYBOARD SCALING LEVEL	40	OP1 EG BIAS SENS	None	TERTOUCH PITCH	None
OP2 KEYBOARD SCALING RATE	41	OP1 AMPLITUDE MOD ENABLE	25	TERTOUCH AMPLITUDE	None
OP2 EG BIAS SENS	None	OP1 KEY VELOCITY	26	TERTOUCH PITCH BIAS	None
OP2 AMPLITUDE MOD ENABLE	42	OP1 OUTPUT LEVEL	27	TERTOUCH EG BIAS	None
OP2 KEY VELOCITY	43	OP1 OSC FREQUENCY COARSE	28	SIGN (OP 1, 2, 3, 4)	93
OP2 OUTPUT LEVEL	44	OP1 OSC FREQUENCY FINE	31	FECT SEL	66
OP2 OSC FREQUENCY COARSE	45	OP1 OSC DETUNE	None	FECT BALANCE	104
OP2 OSC FREQUENCY FINE	48	OP1 OSC MODE	29	FECT OUT LEVEL	105
OP2 OSC DETUNE	None	OP1 OSC FIX RANGE	30	FECT STEREO MIX	None
OP2 OSC MODE	46	OP1 OSC FIX RANGE MODE	None	FECT PARAM 1	117
OP2 OSC FIX RANGE	47	OP1 OSC WAVE	33	FECT PARAM 2	118
OP2 OSC FIX RANGE MODE	None	OP1 GORTHM	83	FECT PARAM 3	119
OP2 OSC WAVE	49	OP1 FEEDBACK LEVEL	94		
OP2 OSC WAVE	49	OP1 JO SPEED	13		
OP3 ATTACK RATE	50				

Tone Modification Name	Assign CC Nr.	Tone Modification Name	Assign CC Nr.	Tone Modification Name	Assign CC Nr.
MOD RATE	95	TILLANCE	92	RRER ENV TIME	90
MOD DEPTH	94	ULATOR KEYFOLLOW	91	DULATOR ENV TIME	89

Macro Function Name	Assign CC Nr.	Macro Function Name	Assign CC Nr.	Macro Function Name	Assign CC Nr.
ENV ATTACK TIME	112	Y SUSTAIN LEVEL	114	CH ENV TIME	116
ENV DECAY TIME	113	W RELEASE TIME	115		

Random Setting:
(CARRMODOPENWFX.)

SysEx Message: Hex Byte Form: 7F
Delimiter: "" (space)

Generate Reset

Click "Generate" button for System Exclusive message.
Click "Reset" button for this window clearing.
Click "Index" link for return to index window. Click "Help" link (see manual) for more info.

BIOS v. 1.00 / OS 009 v. 1.0 Copyright © 2018 CHD Elektroserwis

²⁶ "Universal" ID will be recognized by any SAVVY editor.

²⁷ You can assign more than one parameter to a single MIDI CC Nr.

²⁸ See Chapter 6.1.2 for recommended MIDI SysEx software.

²⁹ SAVVY must be set in **"CTRL→INST"** communication direction.

5.2.2 Request MIDI CC map

Actual **MIDI CC map** can be **saved** in your computer for backup. To request the MIDI CC map:

1. Select **"Request"** message type ①.
2. Select the **"Device ID"** ② (It is either the same number as active MIDI Channel Nr. or **"Universal"**³⁰).
3. Click the **"Generate"** button ④.
4. The hexadecimal MIDI SysEx message is generated as a text in the **"SysEx Message"** field ⑤.
5. **Copy** the text in clipboard (CTRL+C) and **paste** (CTRL+V) in a MIDI SysEx software³¹.
6. Send the message to SAVVY³².
7. SAVVY responds immediately – it sends the MIDI CC map as **"Load"** type SysEx message³³.
8. Now you can save the received message in your computer for further use.

5.2.3 Initialize MIDI CC map

To **Initialize** the MIDI CC map to **factory default** values:

1. Select **"Initialize"** message type ①.
2. Select the **"Device ID"** ② (It is either the same number as active MIDI Channel Nr. or **"Universal"**³⁴).
3. Click the **"Generate"** button ④.
4. The hexadecimal MIDI SysEx message is generated as a text in the **"SysEx Message"** field ⑤.
5. **Copy** the text in clipboard (CTR+C) and **paste** (CTRL+V) in a MIDI SysEx software³⁵.
6. Send the message to SAVVY³⁶.
7. SAVVY starts operation with the initialized MIDI CC map immediately, no reset is necessary.

5.2.4 Other functions

Select **"Hex Byte Form"** and **"Delimiter"** character ⑥ as required for your MIDI SysEx software³⁷. Default setting of the generator is optimized for the recommended **Pocket MIDI** utility³⁸ (see Chapter 6). However some DAW or MIDI SysEx utilities require different format of the generated text message.

To clear the text field and return all values to their defaults, click the **"Reset"** button ⑦.

"Help" link ⑧ opens new window with brief help.

"Index" link ⑨ closes this window and returns to initial generator type selection window.

³⁰ "Universal" ID will be recognized by any SAVVY editor.

³¹ See Chapter 6.1.3 for recommended MIDI SysEx software.

³² SAVVY must be set in **"CTRL→INST"** communication direction and your computer must be connected bi-directionally (both MIDI IN and OUT cables) with SAVVY.

³³ If you are using the recommended MIDI SysEx software, the message should be visible in the "MIDI In Monitor" window - see Chapter 6.1.3.

³⁴ "Universal" ID will be recognized by any SAVVY editor.

³⁵ See Chapter 6.1.2 for recommended MIDI SysEx software.

³⁶ SAVVY must be set in **"CTRL→INST"** communication direction.

³⁷ See the documentation of your DAW for required format.

³⁸ The default format is also compatible with Bome SendSX and various other softwares.

5.3.2 Request single tone

A **single tone** can be **backed up** (e.g. to share your sounds with other users).

To request single tone data:

1. Select **"Request"** message type ①.
2. Select the **"Device ID"** ② (It is either the same number as active MIDI Channel Nr. or **"Universal"**⁴³).
3. Select the **"Tone Nr."** you want to request / backed-up ③.
4. Click the **"Generate"** button ⑤.
5. The hexadecimal MIDI SysEx message is generated as a text in the **"SysEx Message"** field ⑥.
6. **Copy** the text in clipboard (CTRL+C) and **paste** (CTRL+V) in a MIDI Sysex software⁴⁴.
7. Send the message to SAVVY⁴⁵.
8. SAVVY responds immediately – it sends the MIDI CC map as **"Load"** type SysEx message⁴⁶.
9. Now you can save the received message in your computer for further use.

5.3.3 Initialize single tone

To **Initialize** a single tone **to factory default** values:

1. Select **"Initialize"** message type ①.
2. Select the **"Device ID"** ② (It is either the same number as active MIDI Channel Nr. or **"Universal"**⁴⁷).
3. Select the **"Tone Nr."** you want to initialize ③
4. Click the **"Generate"** button ④.
5. The hexadecimal MIDI SysEx message is generated as a text in the **"SysEx Message"** field ⑤.
6. **Copy** the text in clipboard (CTR+C) and **paste** (CTRL+V) in a MIDI Sysex software⁴⁸.
7. Send the message to SAVVY⁴⁹.
8. SAVVY initializes and saves the selected tone immediately, no reset is necessary.

5.3.4 Other functions

Select **"Hex Byte Form"** and **"Delimiter"** character ⑥ as required for your MIDI SysEx software⁵⁰. Default setting of the generator is optimized for the recommended **Pocket MIDI** utility⁵¹ (see Chapter 6). However some DAW or MIDI SysEx utilities require different format of the generated text message.

To clear the text field and return all values to their defaults, click the **"Reset"** button ⑦.

"Help" link ⑧ opens new window with brief help.

"Index" link ⑨ closes this window and returns to initial generator type selection window.

⁴³ "Universal" ID will be recognized by any SAVVY editor.

⁴⁴ See Chapter 6.1.3 for recommended MIDI SysEx software.

⁴⁵ SAVVY must be set in **"CTRL→INST"** communication direction and your computer must be connected bi-directionally (both MIDI IN and OUT cables) with SAVVY.

⁴⁶ If you are using the recommended MIDI SysEx software, the message should be visible in the "MIDI In Monitor" window - see Chapter 6.1.3.

⁴⁷ "Universal" ID will be recognized by any SAVVY editor.

⁴⁸ See Chapter 6.1.2 for recommended MIDI SysEx software.

⁴⁹ SAVVY must be set in **"CTRL→INST"** communication direction.

⁵⁰ See the documentation of your DAW for required format.

⁵¹ The default format is also compatible with Bome SendSX and various other softwares.

6 RECOMMENDED MIDI SOFTWARE

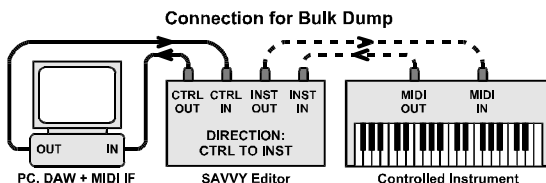
The hexadecimal MIDI SysEx messages created in the Generators (as described in chapter 5) are in **plain text format**. The text can not be saved as a *.syx or *.mid file directly, hence a text to SysEx capable utility or DAW is needed.

6.1 POCKET MIDI

Pocket MIDI⁵² is a utility that can be used to send the text as a SysEx message. It is a simple MIDI monitoring tool for both Windows and Mac OSX platforms. **Pocket MIDI** is a **freeware** for commercial, non-profit or private use.

6.1.1 Setting up the computer⁵³ and software

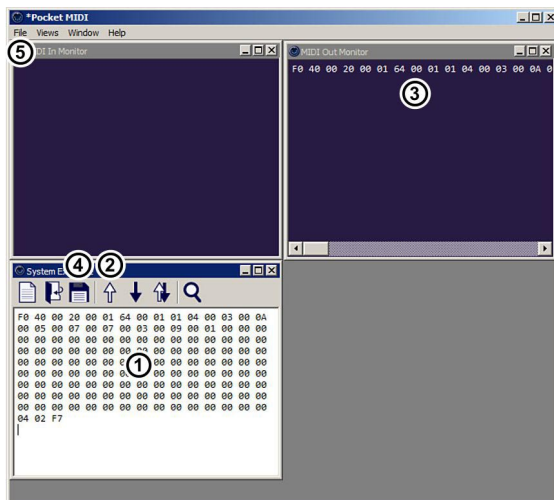
1. **Download** the **Pocket MIDI** utility at <https://www.morson.jp/pocketmidi-webpage/>
2. **Install** the utility in your computer.
3. **Connect** SAVVY accordingly to the figure "Connection for Bulk Dump".
4. **Select** the MIDI interface **Input and Outputs** to device where the SAVVY is connected to (drop-down menu **Views → MIDI Settings → Input Port / Outpu Port**).



6.1.2 Send the text SysEx message to SAVVY

Basic procedure to send any SysEx data to SAVVY.

1. Generate required SysEx message in the SysEx Messages Generator (as described in Chapter 5)⁵⁴.
2. **Copy** the text in clipboard (CTR+C) and **paste** (CTRL+V) in "System Exclusive" window ①.
3. Click the "↑" ("Transmit") arrow ② to send the data to SAVVY.
4. The sent message appears in the "MIDI Out Monitor" window ③.
5. Alternatively **you can save the file** for future use (either by the floppy icon ④ as a *.txt file or in the drop-down "File" menu ⑤ as a *.pocketmidi file).



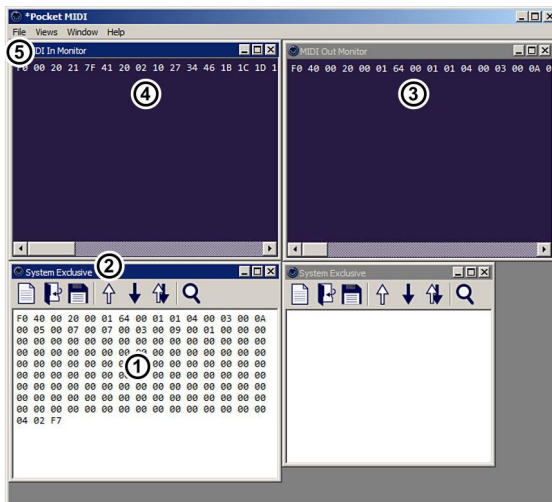
⁵² Pocket MIDI is Copyright © MORSON JAPAN Co.,Ltd. All rights reserved.

⁵³ Computer MIDI interface must be active / switched on and all necessary MIDI drivers correctly installed.

⁵⁴ The correct "FF" Hex Byte Form and " " (space) for Delimiter are the initial values after the generator is launched, so there is no need to change them for Pocket MIDI.

6.1.3 Request the SysEx data from SAVVY

1. **Generate** required ("Request" type) SysEx message in the SysEx Messages Generator (as described in Chapter 5)⁵⁵.
2. **Copy** the text in clipboard (CTR+C) and **paste** (CTRL+V) in "System Exclusive" window ①.
3. Click the "↑" ("Transmit") arrow ② to send the data to SAVVY.
4. The sent message appears in the "MIDI Out Monitor" window ③.
5. SAVVY responds with "Load" type SysEx message. The received message appears in the "MIDI In Monitor" window ④.
6. Click on the "MIDI In Monitor" window heading and **Save** the data (File dropdown menu ⑤) as a *.pocketmidi file) for future use.
7. Alternatively **you can copy the data** (CTRL+C) from "MIDI In Monitor" window ④ and paste (CTRL+V) to any text editor and **save** as a *.txt or document file.



6.2 ALTERNATIVE SOFTWARE SOLUTIONS

There are various DAW and MIDI utilities⁵⁶ that can be used for the communication with SAVVY, both commercial and free. Among the others:

MIDI-OX (free for private users, paid for commercial users) – advanced MIDI tool for MS Windows computers: <http://www.midiox.com/>

Bome SendSX (postcardware for private users, reasonably paid for commercial users) – Simple and effective MS Windows MIDI utility:

<https://www.bome.com/products/sendsx>

InerziaSysEx (commercial) – advanced MIDI tool for Mac OSX:
available on iTunes

Steinberg Cubase Pro (commercial) - DAW for both MS Windows and Mac OSX computers with full sysex support:

<http://www.steinberg.net>

Apple Logic Pro (commercial) – Mac OSX DAW with full sysex support (all versions up to Logic Pro X):
<https://www.apple.com/logic-pro/>

Cakewalk Sonar (commercial) – MS Windows DAW with full sysex support:
<http://www.cakewalk.com/>

etc.

⁵⁵ The correct "FF" Hex Byte Form and " " (space) for Delimiter are the initial values after the generator is launched, so there is no need to change them for Pocket MIDI.

⁵⁶ All mentioned products are copyright of their respective owners.

7 TONE MEMORY ORGANIZER

The Tone Memory Organizer is a support software what we have made for the users to rename and relocate individual tones stored in SAVVY's tone memory.

The software and guide how to use it are available for downloading at our website.


Saby TONE Memory Organizer for
 Yamaha Y50 (500 watt 2.0)

Insert whole received Bulk Dump stream:

P0	00	21	7F	41	19	09	20	00	00	24	17	0F	00	00	00	00	0F	2B	7F	F0	00
21	7F	41	20	09	24	44	45	47	49	4A	7F	0B	40	4E	7F	22	23	24	25	27	
28	29	7F	2A	2B	2C	2D	7F	32	33	34	35	36	7F	38	39	3A	3B	3C	7F	12	
13	14	15	19	1A	1B	1C	1D	7F	53	54	55	56	10	11	0F	55	56	57	7F	7F	
7F	7F	67	68	69	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	6A	6B	6C	40	4E	
4F	50	51	52	7F	AE	2F	30	31	7F	53	54	55	3F	43	7F	10	11	12	7F	7F	
7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	67	68	69	7F	7F	

Status

☐ Check

Source Tone Data:

Tone No.	(Bank No.)	(Prgm No.)	(Name)	(Style/Dia)
22	0	21	LowCutters	P0 00 21 7F 41 30 09 20 05 1F 0F 04 :

Target Tone Data:

Tone No.	(Bank No.)	(Prgm No.)	New Name / Copy Source	(Style/Dia)
133	1	4		P0 00 21 7F 41 30 09 20 01 04 0F 1F 04 :

[Execute]

Reset Index Help

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Tone Library

Bank 0		Bank 1	
Tone	Name	Tone	Name
001:	Strings 1	129:	Celeste
002:	PowerBrass	130:	Clavi
003:	MetalBeats	131:	LatePlays
		132:	LeadGd



Tone Parameters Editor & Controller

Model TPE-1 Nr. 8-361 / Bios v. 1.00 / OS Nr. 009 v. 2.0

Document: 8361100-00920_manual

Manufacturer:

CHD Elektroservis, Czech Republic

www.chd-el.cz info@chd-el.cz



SAVVY

Tone Parameters Editor & Controller