

Tone Parameters Editor & Controller

Version 1.0



Owner's Manual



Contents:

1	SPECIFICATION AND FEATURES	3
1.1	MAIN FEATURES	3
1.2	CONTROL AND INDICATION ELEMENTS	4
1.3	OPERATIONAL SYSTEM (OS) STRUCTURE	4
1.3.1	SYSTEM PARAMETERS	4
1.3.2		5
1.3.3	TONE DATA	6
2	INITIAL SET-UP	6
2.1	POWER SUPPLY	6
2.2		6
3	PREPARE SAVVY FOR USE	7
3.1	LOAD THE OPERATIONAL SYSTEM	7
3.2	LOAD THE TONE BANK	
4	BASIC OPERATION	9
4.1	INITIALIZATION SEQUENCE	9
4.2	COMMUNICATION DIRECTION	9
4.3	SELECT TONE	10
4.4	EDIT TONE	10
4.5	SAVE TONE	10
4.6	COPY TONE	11
4.7	SEND TONE	11
4.8	SELECT THE PATCH LAYER	11
4.9	MEMORY BACKUP - BULK DUMP	12
4.10	HARDWARE WARM RESET	12
4.11	FACTORY RESET	12
5	RECOMMENDED SET-UP EXAMPLES	13
5.1	EXAMPLE 1 – MIDI MEMORY EXPANDER	13
5.2	EXAMPLE 2 – INSTRUMENT CONTROLLER (MIDI CC to SysEx Translator)	13
5.3	EXAMPLE 3 – PC/DAW INTEGRATED SET-UP	14
5.4	EXAMPLE 4 – COMBINED SET-UPs	15
5.5	EXAMPLE 5 – USB MIDI CONTROLLERS	16
6	MIDI IMPLEMENTATION	17
6.1	CHANNEL COMMANDS	17
6.1.1	MIDI CCs	17
6.1.2	PROGRAM CHANGE	17
6.2	SYSTEM EXCLUSIVE MESSAGES	17
6.2.1	TRANSMISSION OF SYSEX	17
7	TECHNICAL SPECIFICATION	18
8	WARRANTY CONDITIONS	18
9	APPENDIX - MIDI IMPLEMENTATION CHART	19
10	APPENDIX – ERROR STATUS INDICATION	20
11	APPENDIX - IMPORTANT SAFETY INSTRUCTIONS	20

1 SPECIFICATION AND FEATURES

SAVVY is a MIDI CC to Sysex Translator, SysEx to MIDI CC Translator, Macro Programmer, Intelligent Random Patch Generator and Memory Expander for various MIDI Instruments.

1.1 MAIN FEATURES

MIDI CC to SysEx Translator

- Translates standard MIDI CC controllers to MIDI SysEx commands for various synthesizers (any connected MIDI controller can be used as dedicated synthesizer programmer).
- Open system with easily updatable operational system profiles for various instruments¹ (one SAVVY can be used for various instruments).
- Each instrument profile is carefully designed and tested for smooth and user-friendly operation.
- Pre-defined map of MIDI CCs for instant use (maximum effort to unify the map of assigned MIDI CCs e.g. LP Filter cutoff or equivalent function always use the MIDI CC Nr. 50).
- Web based application for user definable MIDI CC maps (i.e. to map your modern virtual analog synthesizer to control your vintage instrument).

MIDI SysEx to CC Translator

Translates incoming MIDI SysEx commands from the instrument to standard MIDI CCs. These can be
recorded in your DAW, easily edited and played back (i.e. any editings from instrument panel are
transmitted in real time as MIDI CCs).

Macro programmer

- Except of the original parameters of supported synthesizers, each instrument profile includes special set of Modifiers and Macro parameters (e.g. All Envelope Times shift, Tone Brilliance, Bass Boost and other previously unavailable functions).
- Single MIDI CC can control predefined set of individual parameters (e.g. simultaneous control of all envelope times to immediately change your Bass preset into Evolving Pad with just one).
- SAVVY analyzes the actual patch and uses special calculation algorithms for smooth macro operation.

Intelligent random generator

- Each instrument profile includes set of **specially designed Random generator functions** (e.g. separate random algorithms for oscillators, filters, envelopes as well as full random).
- The individual random algorithms are tailored for more predictable results (e.g. Oscillator random controlling the Waveform, Coarse Tune, PWM, avoiding unwanted pitch modulation effects, etc.).

Memory expander

- Large internal battery backed memory to save user edited tones ("MIDI cartridge" function).
- Saved tones are **sent in real time to your instrument** directly from the SAVVY's control panel.
- The entire memory can be **easily backed up** in the computer with **single button press**.

¹ For actual list of supported instruments check our website www.chd-el.cz

1.2 CONTROL AND INDICATION ELEMENTS

- (1) Segment LED display
- (2) Tone number increment \uparrow button
- (3) Tone number decrement \oint button
- (4) EDITED tone indication LED (red)
- (5) CTRL→INST communication direction indication LED (green)
- (6) INST→CTRL communication direction indication LED (yellow)
- (7) **SLCT** communication direction select button
- (8) SAVE tone button
- (9) SEND tone button
- (10) External power supply connector
- (11) RESET button
- (12) DUMP memory backup button
- (13) MIDI IN from an instrument
- (13) MIDI OUT to an instrument
- (15) MIDI IN from a controller
- (16) MIDI OUT to a controller

Figure 1 - Control and indication elements



1.3 OPERATIONAL SYSTEM (OS) STRUCTURE

SAVVY's operational system (OS) consists of three basic parts: System Parameters, Instrument Parameters and Tone Data.

OS installation package includes factory default values predefined for instant use. However expert users can redefine them accordingly to their needs. A simple web based application can be used to change the predefined values (e.g. MIDI CCs assignment, System parameters and Default tone Data) – see supplemental MIDI System Exclusive Communication Manual for your instrument.

1.3.1 SYSTEM PARAMETERS

System parameters² control basic functions of the SAVVY's hardware and data transfer functions.

The System parameters are divided in three sub-groups:

• Global Parameters define basic functions of SAVVY: MIDI channel for communication, tone number display format, LED brightness, etc.

² The system parameters differ for each instrument operational system (OS). Detailed description of each OS, including default setting, is listed in Manual Supplement for your Instrument.

- Inst → Ctrl Data Transfer Parameters control MIDI communication from instrument to SAVVY and to a MIDI controller. These include the method of MIDI CCs processing, MIDI Program/Bank Change commands and Device ID number for SysEx communication.
- Ctrl → Inst Data Transfer Parameters control MIDI communication from a MIDI controller to SAVVY and to controlled instrument. These define the method of MIDI CCs processing and MIDI Program / Bank Change commands.

1.3.2 INSTRUMENT PARAMETERS

Instrument parameters define MIDI CCs numbers assigned to the tone parameters of an instrument. These include:

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

Each instrument OS uses factory predefined set of the MIDI CCs. For a complete list of used MIDI CCs see the Manual Supplement for your Instrument.

Remarks:

- Factory predefined MIDI CCs assignment can be changed by user (e.g. to use your modern Virtual analogue synthesizer to control a vintage instrument Clavia instruments Nord Leads, A1³ etc. use MIDI CC #74 for Filter Cutoff and #42 for Filter Resonance. If you set the user parametr map for Cutoff and Resonance to CCs #74 and #42, you can use your Nord to control the cutoff and resonance parameters of your vintage instrument).
- The same MIDI CC can be assigned to more parameters / functions at once for a simultaneous control.
- The parameters / functions may not be assigned to a MIDI CC. To exclude the parameter from the MIDI CC control assign CC number 127.
- It is recommended to avoid the use of standard MIDI CCs (e.g. 1: Modulation Wheel, 7: Volume, 64: Hold, etc.). If any of these standard MIDI CCs is assigned to a parameter / function, it controls the parameter / function and is no longer transmitted to the instrument as a standard MIDI CC!
- Values of all assigned CCs can be in full range 0 to 127. SAVVY automatically converts the values to required range of assigned tone parameters if necessary.

³ Nord Lead and A1 are trademarks of Clavia Digital Musical Instruments AB, Sweden. Check the respective product manuals for the list of transmitted MIDI CCs.

1.3.3 TONE DATA

SAVVY has its own independent memory bank for storing the tones (sounds). The tone data include all individual instrument parameters and values of offset Modifiers.

The number of available memory locations for single tones is different for each Instrument OS profile⁴. In general, for the synthesizers with less tone parameters, SAVVY can store more tones a vice versa. However the SAVVY's memory capacity is much larger than the instrument's internal or cartridge memory banks.

2 INITIAL SET-UP

2.1 POWER SUPPLY

The device is powered from external DC power supply unit⁵. The device has no power switch. It starts immediately after the power supply is connected

Use any standard 8 to 15 volts, 250 mA (at least) PSU. The connector should be standard axial "barrel" (diameter 5,5/2,1 mm) with positive pole on inner pin and negative pole (GND) on outer pin (see Figure 2).

The device has built-in reverse polarity protection. Incorrect polarity cause no damage, however the device will not work in such case.



2.2 MIDI SYSTEM CONNECTION

The editor has four MIDI connectors. Instrument MIDI IN and OUT for the instrument and Controller MIDI IN and OUT for MIDI controller, computer, sequencer etc. (see Figure 3).



Figure 3 – MIDI sockets on rear panel

⁵ The power supply unit is not included.

⁴ Detailed description of each OS, including default setting, number of memory locations, assigned MIDI CCs is listed in Manual Supplement for your Instrument.

3 PREPARE SAVVY FOR USE

Note that the device has no power switch. It starts working immediately after power supply adapter is connected.

When switched on for the first time, the device does not have any operational system (OS) installed. It is indicated by error status (**E.01**).

To use SAVVY, you have to load the operational system (OS) for your instrument first. <u>SAVVY can control one</u> instrument at a time. Operational system (OS) for another instrument can be changed (reloaded) anytime by the user.

3.1 LOAD THE OPERATIONAL SYSTEM

To load operational system (OS):

- Visit our website www.chd-el.cz and download the "mid" file ① with required OS for your instrument⁶.
- Launch your DAW or MIDI dump software⁷ in your computer and open the previously downloaded OS file.



- 3. Connect the SAVVY with a computer⁸ as shown on the picture.
- 4. Connect power supply ④ while pressing and holding the RESET button ③. Display indicates "L.--" for "OS load ready" ⑤.
- 5. Release the RESET button.
- 6. Send the OS file to SAVVY (Play the MIDI file in DAW or Send the dump) **(6)**. During this procedure, the display **(5)** counts correctly loaded parts of the OS.
- When successfully finished, the OS is stored in internal battery backed memory. This is indicated by "Lok" – "Load OK".
- All memory locations are initialized with default data then (display indicates "ini" "Initialization").
- 9. SAVVY starts the normal working mode and is ready for use now.

If any error occurs during the above described procedure, display indicates "E." symbol – "Error" and its code number. (For the Error messages see Appendix 10.)

In such case, press **RESET** button shortly. The editor automatically returns to "L.--" for "OS load ready" state and the above paragraphs 6. - 8. can be repeated.



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⁶ All available files are standard SMF0 format compatible with any MIDI sequencer or MIDI SysEx Dump utilities. The library of supported instruments is continuously increasing.

⁷ Recommended MIDI dump software: **MS Windows** - Bome Send SX (www.bome.com/products/sendsx), **Apple OSX** - Snoize SysEx Librarian (www.snoize.com/SysExLibrarian) ... or any MIDI sysex capable DAW.

⁸ Certain cheap MIDI interfaces are known for unreliable transmitting of MIDI SysEx data. Please use only professional products for MIDI SysEx communication i.e. MOTU, Roland, Edirol, Yamaha, Steinberg, Emagic, etc. All above mentioned products are copyright of their respective owners.

3.2 LOAD THE TONE BANK

SAVVY has its own independent memory bank for storing the tones (sounds). After the factory reset (new operational system (OS) load), default tone is stored in all tone memory locations!

It is recommended to load basic set of tones to the internal memory. We have prepared tone banks for each supported instrument⁹ from available factory presets.

To load tone memory bank:

- Visit our website www.chd-el.cz and download the "mid" file ① with required tone bank for your instrument¹⁰.
- Launch your DAW or MIDI dump software¹¹ in your computer and open the previously downloaded tone bank file.



- 3. Connect the SAVVY with a computer¹² as shown on picture **(2)**.
- 4. Set communication to CTRL→INST direction by SLCT button ③. It is indicated by green LED ④.
- 5. Play the MIDI file in DAW or Send the dump (5).
- 6. DUMP decimal point on display indicates receiving of the data **6**.

⁹ Note: You can not load the original or third party sound banks dedicated for your instrument. SAVVY has its own bank format to accomodate larger quantities of tones and special parameters originally not available on your instrument (Modifiers values are stored alongisde the original tone data). Check the chapter 5.3 to see how to use the standard tone banks with SAVVY.

¹⁰ All available files are standard SMF0 format compatible with any MIDI sequencer or MIDI SysEx Dump utilities. The library of supported instruments is continuously increasing.

¹¹ Recommended MIDI dump software: **MS Windows** - Bome Send SX (www.bome.com/products/sendsx), **Apple OSX** - Snoize SysEx Librarian (www.snoize.com/SysExLibrarian) ... or any MIDI sysex capable DAW.

¹² Certain cheap MIDI interfaces are known for unreliable transmitting of MIDI SysEx data. Please use only professional products for MIDI SysEx communication i.e. MOTU, Roland, Edirol, Yamaha, Steinberg, Emagic, etc. All above mentioned products are copyright of their respective owners.

IN] OUT

indicates request to select the tone layer first ("A-B." or "U-L.") (1).

OUT

The required tone layer has to be selected by A/UPR or B/LWR button (2).

BASIC OPERATION

After all necessary data are loaded to SAVVY, it is prepared for normal operation. All functions of the editor can be controlled by buttons on the front panel of the device.

INITIALIZATION SEQUENCE 4.1

When the SAVVY is switched on, the reset sequence is executed. During this sequence, display indicates the actual operational system and its versions.

The communication is set automatically to CTRL->INST direction indicated by green LED (1) and the display shows number of the actually active tone (2).

4.2 COMMUNICATION DIRECTION

SAVVY can **only work in one direction** in real time. It can either transfer data from a controller to an instrument or from an instrument to a controller, not in both directions simultaneously!

To set the communication direction:

1. To change the communication direction press **SLCT** button **(1)**.

MIDI OUT

MIDI Controller

MIDLIN

PC. MIDI Sequence

2. The actual direction is indicated by two LEDs - green LED (2) for $CTRL \rightarrow INST$ direction or yellow LED (3) for INST $\rightarrow CTRL$ direction.



Figure 5 - Instrument to controller communication direction

SysEx Messages

SysEx Messages

Controlled Instrument

MIDLOUT

Controlled Instrument











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4.3 SELECT TONE

Actual selected tone number is shown on display (3). Tone number can be changed / selected manually or by Bank Select and Program Change MIDI commands from an instrument or a connected controller / PC (see chapter 1.3.1 for system parameter description).

To manually change the tone:

Press \uparrow button (1) to increment the tone number. 1.

GD SAYY Owner's Manual

- Press \checkmark button (2) to decrement the tone number. 2.
- To browse the memory bank, press and hold either \uparrow or \downarrow button. 3. The browsing speed is gradually increased when holding the button for a longer time.
- 4. Display indicates selected tone number (3) and SAVVY automatically transmits the new tone data to the instrument (if CTRL->INST direction is active) or to the controller/PC as MIDI CCs¹³ (if INST->CTRL direction is active).

4.4 EDIT TONE

Tone data (individual tone parameters) can be edited either from MIDI controller or instrument (see chapter 4.2 and Manual Supplements for the supported instruments).

If the tone data are changed / edited, it is indicated by red LED EDITED (1).

All such changes of tone parameters are temporary in the tone edit buffer! EDITED LED indicates that the tone has been changed and should be saved to keep edited values.

4.5 SAVE TONE

Edited tone can be saved in any of the SAVVY's internal memory locations¹⁴. SAVVY's internal Tone memory bank is independent on the tone memory of the instrument. It works as a MIDI Memory Expander or "Cartridge" thus.

To save the tone:

- 1. Press SAVE button ①. EDITED LED ② starts blinking.
- 2. Use \uparrow (3) and \downarrow (4) buttons to select desired memory location number (5) in which the tone will be stored¹⁵.
- Press SAVE button again. The EDITED LED (2) turns off. 3.
- 4. The tone is saved now.

To interrupt the saving procedure press the **RESET** button **(6)**. The **EDITED** LED stops blinking and the display shows original tone number. Tone in edit buffer remains unchanged and can be further edited or saved later.





¹³ The data tramission to controller / PC can be deactivated by system parameter for details see chapter 1.3.1.

¹⁴ For the available number of memory locations see the manuals of the instrument's profiles ¹⁵ If the selected tone number is different from the actual tone number, the number blinks.

CD SAYY Owner's Manual

4.6 COPY TONE

It is possible to copy a tone in another memory location.

To copy the tone:

- 1. Select the tone number (1) to be copied with \Uparrow (2) and \checkmark (3) buttons.
- 2. Press SAVE button ④ red EDITED LED starts blinking ⑤.
- 3. Select the target tone number with \uparrow and \checkmark buttons¹⁶.
- 4. Press SAVE button () again. The EDITED LED turns off.
- 5. The tone is copied now.

To interrupt the copying procedure press the **RESET** button **(6)**. The **EDITED** LED stops blinking and the display shows original tone number.

4.7 SEND TONE

The **SEND** button ① transmits tone data from SAVVY's edit buffer either to instrument (if **CTRL** \rightarrow **INST** direction is active) or to controller / PC¹⁷ (if INST \rightarrow CTRL direction is active) ②.

The data transfer is indicated by decimal point \mathbb{DUMP} on the display 3.

4.8 SELECT THE PATCH LAYER

Certain instruments i.e. Roland MKS-80, JX-10, MKS-70 use Patch / Tone system. The patch includes two individual tones (A / Upper and B / Lower). SAVVY can manage both tones separately.

To select the tone layer:

- 1. Press SLCT button 1 twice¹⁸.
- 2. The display indicates the request for tone layer choice 2.
- 3. Now, select requested layer by A/UPR button or B/LWR button (3).

If the selected layer is "B" / "Lower" it is indicated by decimal point in the right corner of the display.









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¹⁶ If the selected tone number is different from the actual tone number, the number blinks.

¹⁷ The data transision to controller / PC can be deactivated by system parameter for details see chapter 1.3.1.

¹⁸ First pressing of the button changes communication direction and the second one returns the original direction.

ID SAY Owner's Manual

4.9 MEMORY BACKUP - BULK DUMP

The DUMP button is active only in the INST \rightarrow CTRL direction (see chapter 4.2), indicated by yellow LED (3).

To backup the internal memory¹⁹:

- 1. Connect SAVVY (1) to a computer²⁰ as described on Figure 5.
- 2. Launch the DAW or MIDI SysEx software²¹ in your computer.
- 3. Select INST→CTRL direction by SELECT button ② yellow LED lights ③.
- 4. Press Receive or record the data in DAW.
- 5. Press the DUMP button ④.
- 6. Execution of the sending procedure is indicated by lighting decimal point DUMP on the display (5).
- 7. When successfully finished, SAVVY is backed up in your PC/DAW (i.e. General Parameters, Instrument Parameters and all Tones Data).
- 8. Do not forget to save the received file.

4.10 HARDWARE WARM RESET

If necessary, a warm hardware reset of the device can be executed. The reset is launched by pushing RESET button ①.

When the process is launched, the device stops operation and indicates "**rSt**" message ②. When finished, the device returns to initialization sequence (see chapter 4.1) and continues the normal operation.

4.11 FACTORY RESET

This procedure restores the system parameters memory, instrument parameters memory and all tone memories with original factory data (as described in chapter 3.1 – paragraph 8).

All user data will be rewritten during the factory reset - it is recommended to back up all data before the factory reset (see chapter 4.9).

To execute the factory reset:

- 1. Press and hold SAVE button ①.
- 2. Turn the device on connect power supply adapter ②.
- 3. Display indicates "ini" symbols (3).
- 4. Release the SAVE button the device is now initializing the memory.
- 5. When finished, the device starts automatically with factory default values of all parameters.







¹⁹ Use this function to archive content of whole memory of the device in a MIDI sequencer.

²⁰ Certain cheap MIDI interfaces are known for unreliable transmitting of MIDI SysEx data. Please use only professional products for MIDI SysEx communication i.e. MOTU, Roland, Edirol, Yamaha, Steinberg, Emagic, etc.

²¹ Data are transmitted as SysEx messages. Recommended MIDI SysEx software: **MS Windows** - Bome Send SX (www.bome.com/products/sendsx), **Apple OSX** - Snoize SysEx Librarian (www.snoize.com/SysExLibrarian) or any DAW.

5 RECOMMENDED SET-UP EXAMPLES

Following examples explain various recommended setups.

5.1 EXAMPLE 1 – MIDI MEMORY EXPANDER

SAVVY can fully replace exp nsive and sometimes hard-to-find memory cartridges.

Most of the supported instruments transmit tone parameters to MIDI output automatically during editing and tone²² change. The tone data can be saved in SAVVY's internal memory bank and recalled instantly.

To use SAVVY as a MIDI Memory Expander (or "MIDI Cartridge") simply connect the Instrument MIDI IN/OUT with the MIDI terminals of your synthesizer as shown on the following picture.



Figure 6 - MIDI Memory Expander

To receive and save the single tone from the instrument (Figure 6, part A):

- 1. Set the communication direction to $INST \rightarrow CTRL$.
- 2. Select a tone on the instrument (the tone data is automatically transmitted).
- 3. SAVVY indicates received tone data by red LED EDITED.
- 4. The received tone can be saved in any of the SAVVY's internal memory locations now and recalled later. (for details, see chapter 4.5).

Any further parameter editing on the instrument is also automatically transmitted and can be saved.

To recall the tone (Figure 6, part B):

- 1. Set the CTRL→INST (7) communication direction.
- 2. Use \uparrow / \downarrow buttons to browse the memory.
- 3. The single tones from SAVVY's memory are automatically sent to the instrument and instantly available for playing (for details, see chapter 4.3).

5.2 EXAMPLE 2 – INSTRUMENT CONTROLLER (MIDI CC to SysEx Translator)

Besides the memory expander function, the system can be further expanded with any MIDI CC capable controller. MIDI CCs are translated to System Exclusive commands to control the individual tone parameters of the connected instrument as well as specially designed modifiers, macro and random functions.

To use SAVVY as a MIDI CC to SysEx Translator, connect the SAVVY as shown on the following Figure 7.

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²² e.g. Roland Juno series, Roland JX-8P, Kawai K-3, Yamaha DX, and many others. For details see the Manual Supplement for your synthesizer.

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To control the instrument tone parameters:

- Set the CTRL→INST communication direction.
- Map your connected controller device (sliders, pots, etc.) accordingly to the list of assigned parameters²³.
- 3. Move the assigned controllers to adjust the parameters of the instrument.

The SAVVY's MIDI Memory Expander function works the same way as described in chapter 5.1, so you can adjust the parameters of a tone and save it in any of SAVVY's or Instrument's memory locations.

5.3 EXAMPLE 3 – PC / DAW INTEGRATED SET-UP

Basic MIDI Memory Expander setup can be expanded with PC/DAW. With the following setting you can easily create user tone library from downloaded tone banks or to record any parameter editing as MIDI CCs for easier DAW work²⁴.

To use SAVVY with PC / DAW, connect the SAVVY as shown on the following Figure 8.

Figure 8 - PC / DAW integrated set-up A) CTRL CTRL INST INST мірі MID OUT OUT OUT IN IN IN DIRECTION: OUT IN INST TO CTRL PC, DAW + MIDI IF SAVVY Editor Controlled Instrument B) CTRL CTRL INST INST MID OUT IN OUT IN IN DIRECTION out CTRL TO INST PC, DAW + MIDI IF SAVVY Editor Controlled Instrument

To record tone parameters editing in PC / DAW:

- 1. Set the communication direction to $INST \rightarrow CTRL$.
- 2. Adjust tone parameters directly on your instrument (SAVVY is translating the tone tweaks in real-time to MIDI CCs Figure 8, Part A).
- 3. Record incoming MIDI CCs in your DAW.
- Recorded data can be easily edited as any other MIDI CCs in your DAW and played back (to do so the communication direction has to be set to CTRL→INST - Figure 8, Part B).

There are many tone banks for various synthesizers available on the internet. To create user library from various tone banks:

Figure 7 - MIDI CC to SysEx Translator



²³ The detailed description of available parameters and assigned MIDI CCs is described in Manual Supplements for individual supported instruments. The map of MIDI CCs is defined with maximum effort on unification, so you can use the same controller mapping for various instruments. However the map can be user changed (e.g. to use your modern virtual analog synthesizer to control your vintage instrument).

²⁴ All DAW systems have many tools to handle MIDI CCs e.g. step sequencers, various MIDI processors, etc.

CD SAY Owner's Manual

- 1. Set the $CTRL \rightarrow INST$ communication direction.
- Send the tone bank file²⁵ (usually in *.mid or *.syx format) from PC / DAW to instrument²⁶ (the data throughput the SAVVY).
- 3. Set the communication direction to $INST \rightarrow CTRL$.
- 4. Check the new tone bank on your instrument.
- 5. Selected favorite tones can be instantly saved in SAVVY's memory (for details, see chapter 4.5).
- You can repeat the above procedure as many times as you want until you fill the SAVVY's tone memory²⁷ which is much larger than the capacity of the Instrument's internal memory.

5.4 EXAMPLE 4 – COMBINED SET-UPs

Previous examples can be combined in various ways. The operation instructions are combination of the above described procedures. Combined set-up with direct controller connection, PC/DAW backup and MIDI CC recording:



Combined set-up with PC/DAW as a MIDI Thru device:

Figure 10 - Combined Set-up 2





²⁶ Recommended MIDI SysEx software: MS Windows - Bome Send SX (www.bome.com/products/sendsx), Apple OSX - Snoize SysEx Librarian (www.snoize.com/SysExLibrarian) ... or any DAW

15

⁷ For the available number of memory locations, see the manuals of the instrument's profiles

This is the most advanced set-up that requires PC / DAW with two MIDI IN / OUT terminals. The PC / DAW is used as MIDI Thru device and as a MIDI CCs recorder in the opposite direction.



Figure 11 - Advanced Combined Set-up

5.5 EXAMPLE 5 – USB MIDI CONTROLLERS

SAVVY uses standard MIDI protocol and 5-pin DIN MIDI cables. Unfortunately, many modern MIDI controller devices lack the MIDI terminals and have USB connector only. In such case, you have to use your PC / DAW as a MIDI interface / thru-box²⁸.



²⁸ MIDI Thru function has to be activated in your DAW. Any MIDI CCs filtering has to be deactivated. For details see documentation of your DAW. Also keep in mind that all necessary USB and Controller drivers have to be correctly installed and working.

6 MIDI IMPLEMENTATION

SAVVY uses MIDI channel commands and SysEx MIDI messages for communication. All Common System MIDI commands are transferred through the device in both communication directions.

6.1 CHANNEL COMMANDS

SAVVY recognizes "MIDI CCs" and "Program Change" commands. Acceptable commands are received / transmitted on selected MIDI channel defined by the **MIDI Channel** System Global parameter (see chapter 1.3.1 and Manual Supplement for corresponding instrument).

All other MIDI Channel commands are transferred through the device unaffected.

So-called Running Status mode of MIDI communication is supported.

6.1.1 MIDI CCs

MIDI Control Changes (CCs) commands are accepted / transmitted in dependence on selected communication direction (see chapter 4.2).

- If CTRL→INST direction is selected, received CCs are translated to tone data parameters (see chapter 1.3.2) for the controlled instrument at Instrument MIDI OUT. Unassigned MIDI CCs are transferred through SAVVY.
- If INST→CTRL direction is selected, tone data changes made directly on the controlled instrument are converted to MIDI CCs (see chapter 1.3.2). All MIDI CCs transmitted from controlled instrument are transferred through SAVVY to the Controller MIDI OUT.

6.1.2 PROGRAM CHANGE

Program Change MIDI commands are accepted / transmitted / transferred accordingly to the system parameters setting (see chapter 1.3.1). Program change can be set independently for both communication directions.

6.2 SYSTEM EXCLUSIVE MESSAGES

SAVVY uses System Exclusive communication protocol for bi-directional memory bulk dumps and system functions settings²⁹.

6.2.1 TRANSMISSION OF SYSEX

SAVVY can transmit whole contents of its internal memory as block of a Bulk Dump SysEx messages for data bakup. It can be done either manually (see chapter 4.9) or requested from external MIDI device (Bulk Dump Request SysEx message).

²⁹ For detailed description, see System Exclusive communication manual.

7 TECHNICAL SPECIFICATION

Dimensions (W/H/D):	145 mm / 48 mm / 90 mm
Weight:	460 g
Power supply unit:	External, standard "barrel" axial connector 5,5 / 2,1 mm
Supply voltage:	8 to 15 V_{DC} , need not be stabilized
Current consumption:	250 mA max
MIDI buses:	fully according to MIDI Manufacturer Association standards
MIDI connectors:	4x DIN 41524 (5 pins / 180°)
Electrical design :	under the regulations of the ČSN EN 60335-1+A55, ČSN EN 60335-2-45, IEC 60065
EMC :	under the regulations of the EN 55014. EN 55013. EN 55020
Operating environment :	standard indoor
Range of operating temperature :	+10 to +35 °C
Relative environmental humidity :	up to 85 %

8 WARRANTY CONDITIONS

The equipment is provided with **thirty-months warranty** starting from the date of the equipment take-over by the customer. This date must be specified on warranty list together with dealer's confirmation.

During this period of time, all defects of equipment or its accessories, caused by defective material or faulty manufacturing, will be removed free of charge.

Warranty repair is asserted by the customer against the dealer.

Warranty period is to be extended for the time period, during which the product was under the warranty repair.

The relevant legal regulations take effect in case of cancellation of purchase contract.

The customer will lose the right for free warranty repair, if he/she will not be able to submit properly filled out warranty list or if the defects of the product had been caused by:

- unavoidable event (natural disaster),
- connecting the device to the incorrect supply voltage,
- inputs or outputs overloading by connecting the signals source or load source with not-corresponding characteristics etc.,
- faulty equipment operation, which is at variance with the instructions referred-to in the operating manual,
- mechanical damage caused by consumer during transportation or usage of equipment,
- unprofessional interference with the equipment or by equipment modification without manufacturer's approval.

9 APPENDIX – MIDI IMPLEMENTATION CHART

MIDI IMPLEMENTATION CHART

Device : SAVVY Editor

Date : 1 / 2018 Version : 1.0

Model: 8-361 Version		/ersion : 1.0			
Function		Transmission	Reception	Remarks	
Basic	Default	1~16	1~16	1)	
Channel	Changed	1~16	1~16	¹)	
Mode	Default	Mode 3	Mode 3	Not Altored	
	Messages	х	x	Not Altered	
Note Number		х	X	²)	
Velocity	Note ON	х	X	²)	
	Note OFF	х	x		
After	Key's	Х	X	²)	
Touch	Channel's	х	x		
Pitch Bender		х	X	²)	
Control Changes	0 to 127	0	0	Instrument specific ³)	
Program Change	0 to 127	0	0	Tone change ³)	
System Exclusive	1	0	0	See description	
System	Song Position	х	Х	²)	
Common	Song Select	х	х		
	Tune	х	x		
System	Clock	х	X	²)	
Real Time	Command	х	x		
Others	Local ON/OFF	х	X	²)	
	All Notes Off	х	X		
	Active Sensing	х	х		
	Reset	х	х		
Notes : 1) Can be	changed by user				
²) Data ar	e going through t	he device only			
³) See Ma	nual Supplement	for your Instrum	ent.		
Mode 1 : OMNI O	N, POLY	Mode 2 : OM	NI ON, MONO		O:Yes
Mode 3 : OMNI O	FF, POLY	Mode 4 : OM	NI OFF, MONO		X : No

10 APPENDIX – ERROR STATUS INDICATION

In some extreme cases, an error can occur during the device operation. In such case, the device stops its operation and user is informed about the error status by "**E.xx**" symbols on display where "**xx**" specifies the error type (number) – see table 1.

	Table 1 –	Error status indication	
Error	Erro	or description	Automatic
number	Indicated problem	Solution	reset
E.01	Invalid or missing operational system	Load an operational system to the device.	Rejected
E.02	Incorrect write to memory during Bulk Dump – System Parameters	Turn the device off and then on again. If the problem persists, the device must be repaired in a service centre.	Rejected
E.03	Incorrect write to memory during Bulk Dump – Instrument Parameters	Turn the device off and then on again. If the problem persists, the device must be repaired in a service center.	Rejected
E.04	Incorrect write to memory during Bulk Dump – Tone Parameters	Turn the device off and then on again. If the problem persists, the device must be repaired in a service center.	Rejected
E.05	Inconvenient (lower) version of the SAVVY device than loaded operational system requires	Load correct (lower) version of operational system	Rejected
E.11	Input MIDI Buffer Overflow	Turn the device off and then on again or set "MIDI Errors Auto Reset" global parameter to On	Possible
E.12	Output MIDI Buffer Overflow	Turn the device off and then on again or set "MIDI Errors Auto Reset" global parameter to On	Possible

Errors E.11 and E.12 do not allow correct processing of incoming and outgoing MIDI data. Further steps depend on "MIDI Errors Auto Reset" system global parameter setting (see chapter 1.3.1): If the parameter is "On", the device resets automatically and returns to normal working mode. If the parameter is "Off", it is necessary to turn the device off and on again.

If an error occurs during an operational system loading, the loading procedure is interrupted and the error number is indicated on the display (see table 2). In that case, press **RESET** button and repeat whole loading procedure.

	Table 2 – Errors during an operational system loading
Error number	Error description
E.21	"Instrument ID" byte does not match the chosen instrument in a part of the MIDI file.
E.22	"Version ID" byte does not match the chosen instrument in a part of the MIDI file.
E.23	Total number of parts of the MIDI file exceeds maximal possible range.
E.24	Number of a part of the MIDI file exceeds valid value.
E.25	Order of a part of the MIDI file does not match the required number.
E.26	Wrong databyte in a part of the MIDI file.
E.27	Wrong checksum of a part of the MIDI file.
E.28	Insufficient number of databytes in a part of the MIDI file than requested.
E.29	Excessive number of databytes in a part of the MIDI file than requested.
E.31	"Instrument ID" byte mismatch in loaded data.
E.32	"Version ID" byte mismatch in loaded data.
E.33	Wrong checksum of the loaded operating system.
E.34	Unable to store the whole operating system in memory.
E.35	Unable to clear unused area of memory.

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11 APPENDIX – IMPORTANT SAFETY INSTRUCTIONS



CAUTION RISK OF ELECTRIC SHOCK - DO NOT OPEN ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR



The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

WARNING

FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

WATER AND MOISTURE: Appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

GROUNDING OR POLARIZATION: Precautions should be takenso that the grounding or polarization means of an appliance is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

SERVICING: To reduce the risk of fire or electric shock, the user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE: Replace fuse with same type and rating only.

LITHIUM BATTERY WARNING

CAUTION!

This product may contain a lithium battery. There is danger of explosion if the battery is incorrectly replaced. Replace only with an Eveready CR 2032 or equivalent. Make sure the battery is installed with the correct polarity. Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandřren.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig hÍndtering. Udskiftning mÍ kun ske med batteri av samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

VAROITUS!

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laite-valmistajan suosittelemaan tyyppin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

VARNING!

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikan-tens instruktion.

INFORMATION FOR USERS ON DISPOSAL OF OLD EQUIPMENT AND BATTERIES [EUROPEAN UNION ONLY]



Equipment bearing these symbols should not be disposed as general household waste. You should look for appropriate recycling facilities and systems for the disposal of these products.

Notice: The sign Pb below the symbol for batteries indicates that this battery contains lead.

ELECTROMAGNETIC COMPATIBILITY

This unit conforms to the Product Specifications noted on the Declaration of Conformity. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation. Operation of this unit within significant electromagnetic fields should be avoided.
- use only shielded interconnecting cables.

DECLARATION OF CONFORMITY

Manufacturer's Name:	CHD Elektroservis
Manufacturer's Address:	Nad kundratkou 27, Praha 9, Czech Republic
declares that the product:	
Product name:	SAVVY (TPE-1, Model 8-361)
Product option:	None
conforms to the following Product	Specifications:
Safety:	IEC 60065
EMC:	EN 55013
	EN 55020
Supplementary Information:	The product herewith complies with the requirements of the EMC Directive 89/336/EEC as amended by Directive 93/68/E

Tone Parameters Editor & Controller Model TPE-1 Nr. 8-361 / Bios v. 1.00

Document: 8361100_owner

Manufacturer: CHD Elektroservis, Czech Republic www.chd-el.cz info@chd-el.cz

23



Tone Parameters Editor & Controller