PSS Revive

User Manual

2023. Mar. 04

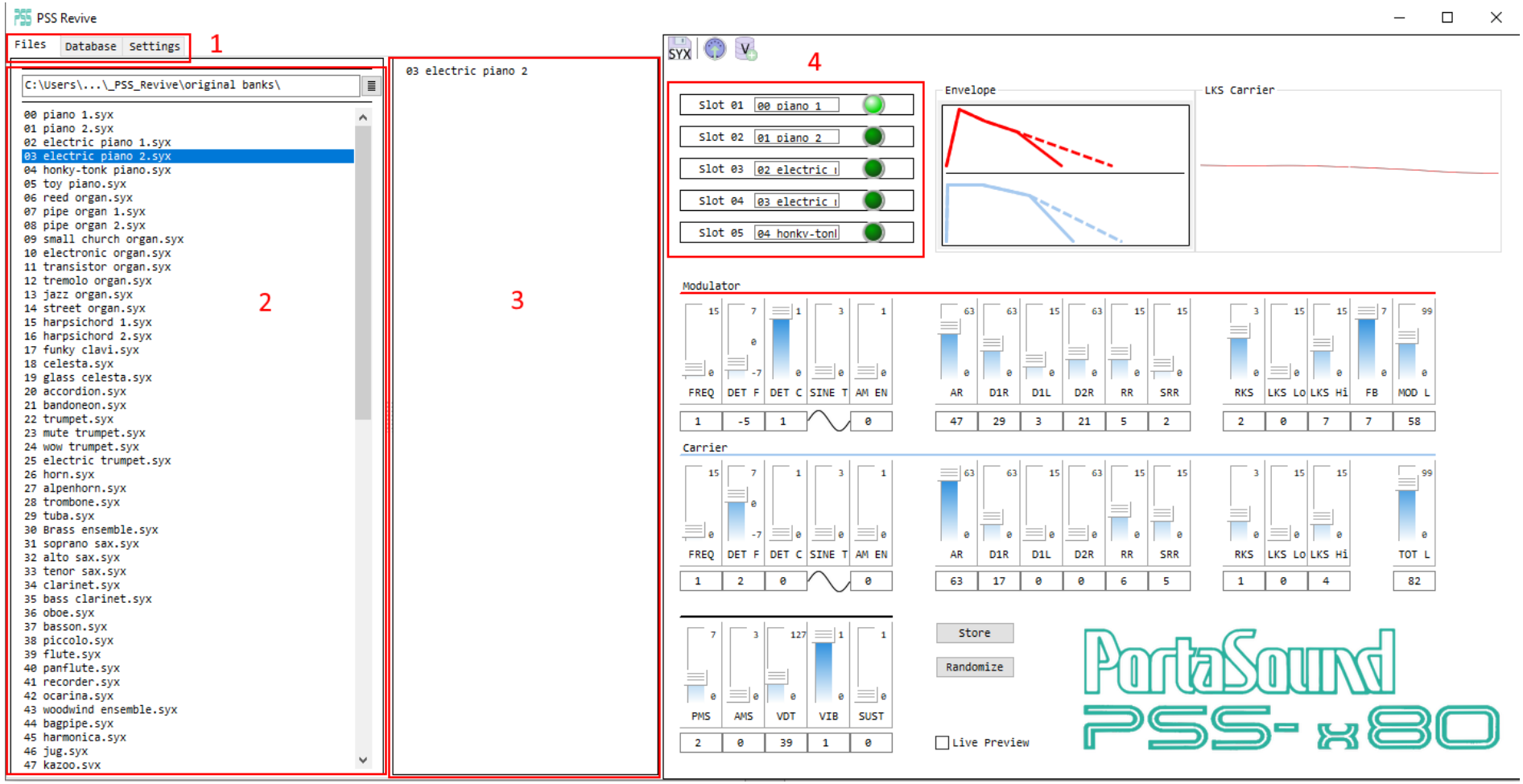
Based on PSS Revive 1.0.0.15

About

PSS Revive is an editor/librarian for Yamaha PSS 480, 580, 680 and 780 keyboards.

The user interface of PSS Revive is based mostly on using a computer mouse to work. It means that most of the operations are done by clicking or drag&drop.

Main screen



Main screen is the file librarian. You can work with files from a folder on your filesystem, or work with data stored in the database (1).

On the Files tab, select a directory with your files (button with horizontal lines). In the files list (2) you can see your SysEx files from the selected directory.

If you select a SysEx file, it will be analyzed and in the Voices list (3) you can see the voices from the SysEx file. PSS Revive works with two kinds of SysEx files for PSS keyboards – files containing one voice and files containing 5 voices.

Now, you can drag&drop a whole file (from 2) or single voice (from 3) to the bank slots (4). The drop area is the field that shows the voice name.

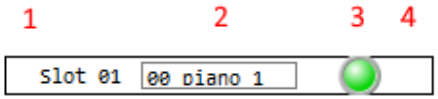
If you drag&drop a file from files list to a slot – it will load to the slots beginning with the first slot. If the file contains 5 voices – all the slots will be loaded. If the file contains just one voice, it'll be loaded into the first slot.

If you drag&drop from the voices list to a slot – similar to the previous operation with the difference that you can select the exact slot where you want to load your voice.

At the top of the right panel is a toolbar with following buttons:

- Save the slots to a SysEx file (one file with 5 voices). **Additional file with the file extension ".ins" will also be created**. It contains the voice name as the SysEx files for Yamaha PSS does not stores the voice names
- Send bank over MIDI to a PSS-Series device
- Save the voices to the database

Slots



Every slot has a couple of clickable areas:

1. Space before the text “Slot X” – loads the voice into the editor
2. Voice name – drop area for voices from file/voice/databank lists. You can edit the file name here.
3. LED – when clicked for the first time – it loads the voice into the editor. When clicked one more time – it opens the VMEM View for this voice. If green – all the changes from the editor are stored internally in the PSS Revive. If yellow – there are changes that are not saved/stored.
4. Click on the area 4 also loads the voice into the editor

VMEM View

Yamaha uses the terms xMEM and xCED for the representation of the parameters. VMEM would be VoiceMEMory. VCED would be something like VoiceCurrentEDitor. Terms like AMEM, ACED, PMEM, PCED etc. are used for different sets of parameters for Yamaha FM synths (A-Additional, P-Performance etc.)

xMEM forms are “compressed” presentation of the parameters. Parameters in this form take less bytes and thus less time to be transmitted over MIDI to the devices. One byte can contain more than one parameter if the parameters are smaller than a byte.

Not to forget – for MIDI SysEx messages, all the data must be just 7 bit long. It means, that all the parameters with values greater than 127 must be divided into two bytes.

So, let's take a look at the PSS parameters in VMEM form from the Yamaha's User Manual:

DATA CONTENTS

	7	6	5	4	3	2	1	0	
0	BANK NUMBER								
1	DT1				MUL				M
2									C
3	X	TL							M
4	X								C
5	LKS (HI)				LKS (LO)				M
6									C
7	RKS		AR						M
8									C
9	AM EN	DT 2	D1R						M
10									C
11	SIN TBL		D2R						M
12									C
13	D1L				RR				M
14									C
15	X	X	FB			X	X	X	
16	X	PMS				X	X	AMS	
17	X	X	X	X	X	X	X	X	
18	X	X	X	X	X	X	X	X	
19	X	X	X	X	X	X	X	X	
20	X	X	X	X	SRR				M
21	X	X	X	X					C
22	X	VDT							
23	X	X	X	X	X	X	X	X	
24	V	S	X	X	X	X	X	X	
25	X	X	X	X	X	X	X	X	
26	X	X	X	X	X	X	X	X	
27	X	X	X	X	X	X	X	X	
28	X	X	X	X	X	X	X	X	
29	X	X	X	X	X	X	X	X	
30	X	X	X	X	X	X	X	X	
31	X	X	X	X	X	X	X	X	
32	X	X	X	X	X	X	X	X	

M: MODULATOR C: CARRIER

NOTICE: FOLLOWING DATA BYTES ARE TO BE DIVIDED INTO 4BIT DATA AND SENT AS LESS- SIGNIFICANT 4BITS OF DATA PART. SIGNIFICANT 4BITS ARE SENT FIRST.

BANK NUMBER: INDICATES THE NUMBER OF BANK TO WHICH FOLLOWING DATA HAVE TO BE SENT.
0~4 MEANS BANK#1~5. ANY DATA OVER 4 IS ACCEPTED AS 0.

X: DOES NOT MATTER.

DT1: FINE DETUNE (THE 4TH BIT IS SIGN BIT. OTHER 3BITS STAND FOR ABSOLUTE VALUE.)

DT2: COARSE DETUNE (1: +600CENTS, 0: DISABLE)

MUL.: MULTIPLE NUMBER OF FREQUENCY

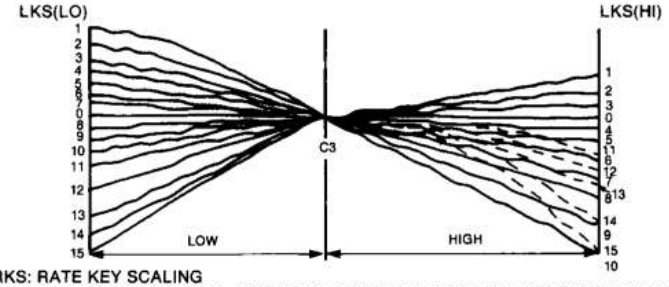
TL: TOTAL LEVEL
0000000 = 99 OF PANEL DATA
0000001 = 98 OF PANEL DATA

1100011 = 00 OF PANEL DATA

1111111 = 00 OF PANEL DATA

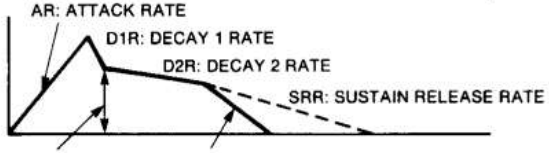
LKS(HI): LEVEL KEY SCALING (SEE BELOW)

LKS(LO): LEVEL KEY SCALING (SEE BELOW)



RKS: RATE KEY SCALING

AR, D1R, D2R, D1L, RR, SRR: ENVELOPE GENERATOR PARAMETERS (SEE BELOW)



D1L: DECAY 1 LEVEL RR: RELEASE RATE

AMEN: AMPLITUDE MODULATION ENABLE 1: ON, 0: OFF

SIN TBL: SINE TABLE FORM
0: SINE WAVE
1: SQUARED SINE WAVE
2: SINE HALF WAVE
3: SQUARED SINE HALF WAVE

FB: FEED BACK LEVEL

PMS: PITCH MODULATION (VIBRATO) SENSITIVITY

AMS: AMPLITUDE MODULATION SENSITIVITY

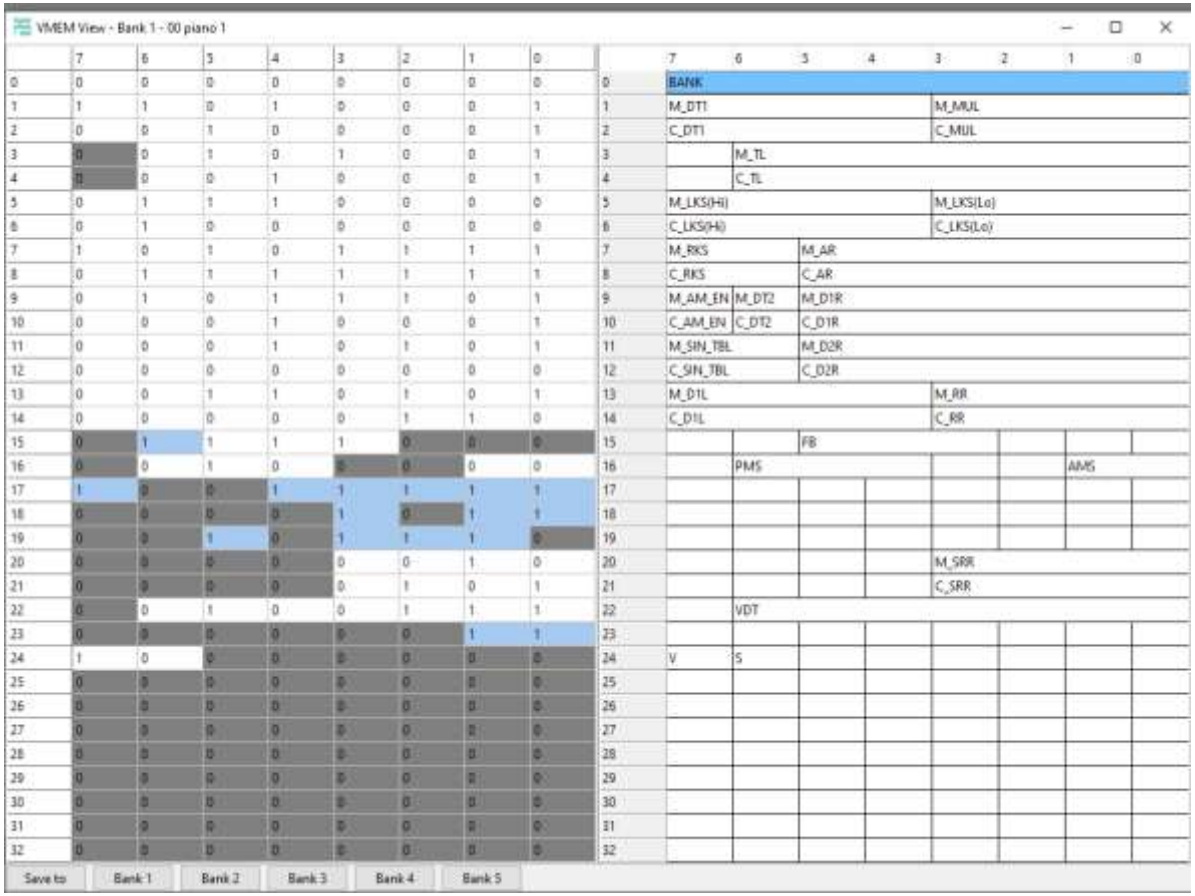
VDT: VIBRATO DELAY TIME

V: VIBRATO ENABLE 1: ON, 0: OFF

S: SUSTAIN ENABLE 1: ON, 0: OFF

- We see it is a VMEM form – more than one parameter per byte
- But the lines are 8-bit long? We just said that SysEx can be just 7 bit. Well, the PSS series use an unusual way to transfer the parameters. Every byte will be divided into nibbles (higher and lower 4 bits are two nibbles). First, the higher nibble will be padded with leading zeros until it reaches 7 bites and it will be transmitted as such. Same goes for the lower nibble after that. It means, the 32 bytes from the VMEM will be transmitted as 64 padded nibbles.

In PSS Revive, if you click twice (not double-click) on one of the slot LEDs, you will see the VMEM View of the voice, and you can experiment by editing the voice directly in VMEM:



On the left side is the VMEM data. On the right side is the legend, just like in Yamaha's User Manual.

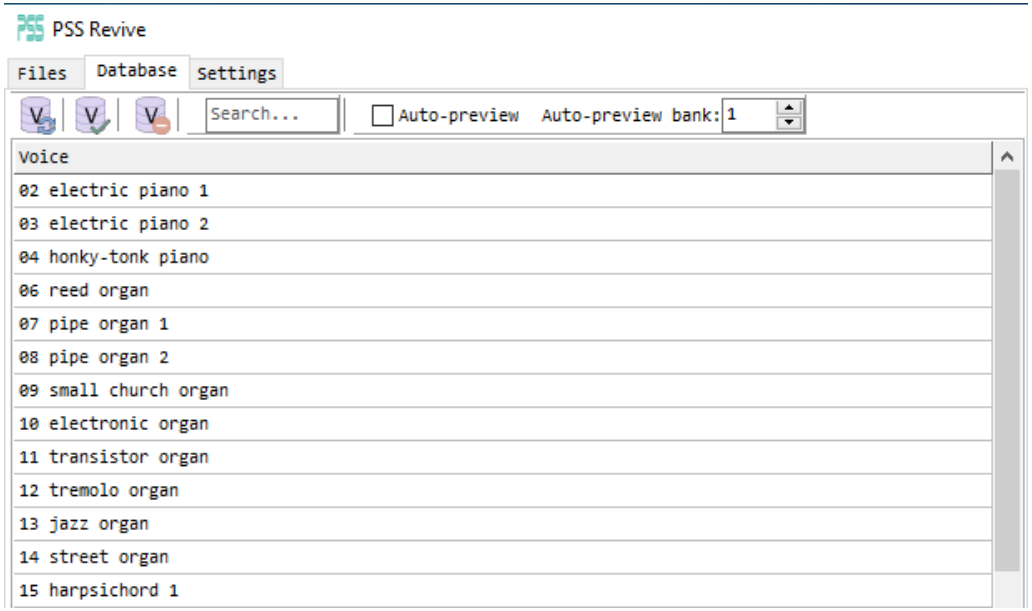
Grey bits are the bits marked as "does not matter" in Yamaha's User Manual.

Sky-blue bits are the grey ones if these are set, even if Yamaha says that these "does not matter".

It probably does not matter, probably some other synths/keyboards use the same SysEx, but with more parameters. Anyway, you can try to set/clear the gray bits, and it may be that you find some undocumented function of our mysterious PSS.

You can also call VMEM View by clicking on the big logo in the bottom right corner of the program. This one is meant to use in combination with file list on the most left part of the program, so you can take quick look at the unknown parameters of the voices in your SysEx files.

Database



In addition to saving our parameters to files, you can also store them to the database.

The database file is located in user's home directory. On Windows, the location will be something like ***c:\Users\user_name\PSS Revive\PSSSysExDB.sqlite*** . You will likely backup this file at some point – your voices are stored here. The database used is SQLite3, and you can open this file with any program that can view SQLite3 files. You do not depend on PSS Revive to open this file.

The database screen is not refreshed automatically. You need to click on the first button on the toolbar (database with blue refresh symbol).

You can drag&drop the voices from here to the slots.

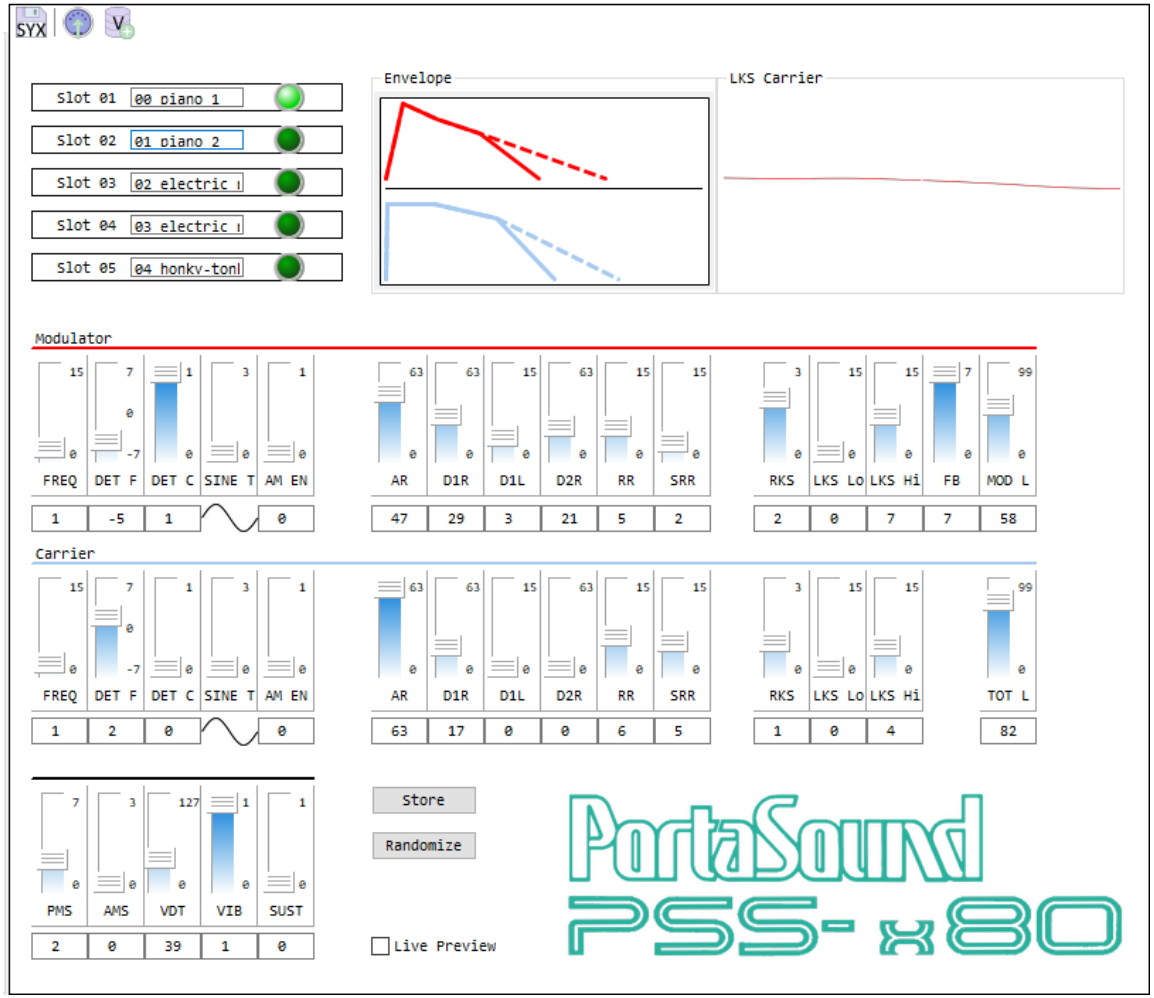
You can edit the names and commit the changes back to the database (2nd button, the one with a database symbol and a green check-mark)

The last button is for deleting the selected voice from the database.

There is also a Search field and Auto-Preview function. If Auto-Preview is checked, the voice will automatically be sent to your PSS if you click on it on the list (moving with keyboard cursor keys works to). The voice will be sent to the Bank selected in Auto-preview bank.

Clicking on column headers will sort the list.

Voice editor



In the top part you can see the graphical presentation of the envelopes, and the graphical presentation of the Level Key Scaling parameters. Clicking on the LKS graph will toggle between the modulator and carrier graphs.

The first group of parameters, marked with a red line, are the modulator parameters. The second group, marked with a blue line, are the carrier parameters. The third group are the general parameters (marked with a black line). The mnemonics used are the same as used by Yamaha in the User's Manual.

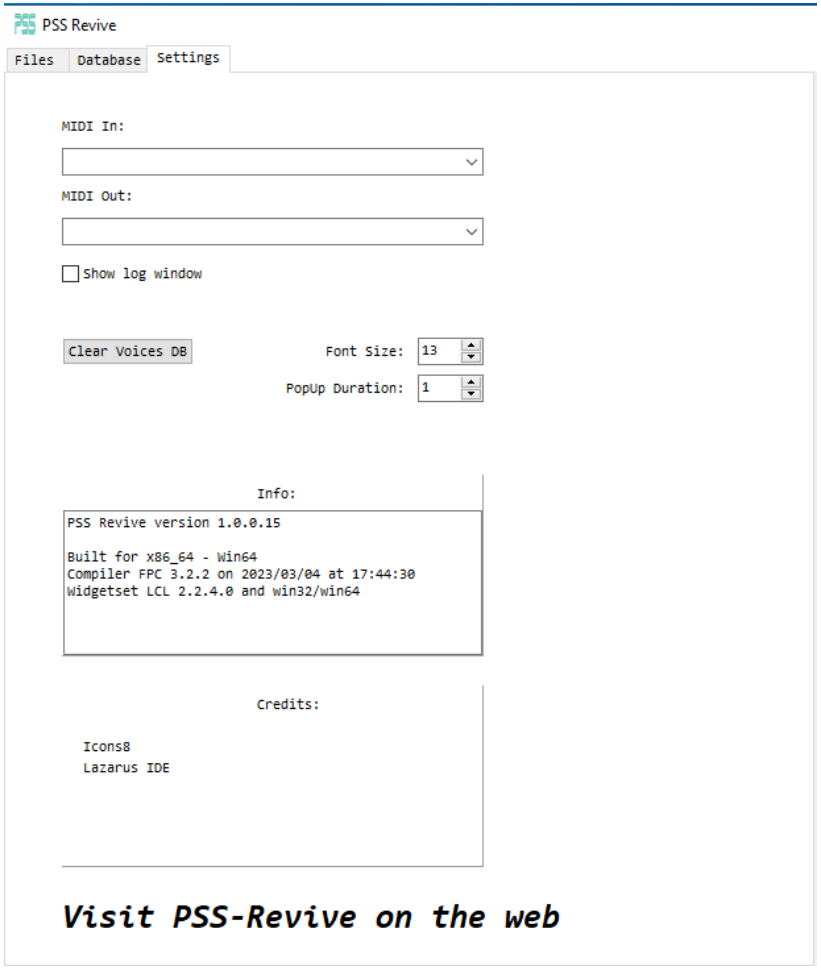
I decided to use sliders even for the switch-alike parameters (parameters with just two possible states, like on/off). The fields under the sliders are editable – you can enter the parameters by typing the values.

After editing the parameters, you would like to "Store" them. This will just store the parameters into the programs internal memory. No file is saved until you do so.

If you use "Live preview", every parameter change will be sent to your keyboard. Do not worry – it is a fast transmission as just the one edited voice will be sent. The "Store" function is here automatically executed. It means that every change will be saved to the program's internal bank memory.

Randomize does like it says – it will generate some random values for the parameters. The results can be interesting. It can be combined with "Live preview".

Settings



On the Settings tab you can select the MIDI ports, select the font size (needed because of different real font sizes on the different platforms. One size does not fit all…). Here is also the button to **delete** all your voices from the database. This operation **cannot** be reverted. Your data will be lost, be warned!

“Show log” opens the SysEx monitor in its own window. If something does not works like it should, this can help to debug the program. It shows the SysEx messages sent and received over MIDI.

Here you can also see some system info and some clickable links (opens in browser).

PSS Revive uses icons (and derived icons) from Icons8.

Links and references

PSS Revive (this program): https://github.com/BobanSpasic/PSS-Revive

PSSEdit (my old editor for PSS series): http://members.chello.at/bobby100/

PSSWaveEditor (another editor, written in Java): https://www.facebook.com/PssWaveEditor/

Ctrlr panel for PSS 480/580/680/780 from Martin Tarenskeen: http://ctrlr.martintarenskeen.nl/

PortaSoundJS (web-based editor written in JS): https://portasound.pages.dev/ https://github.com/mmontag/portasound-js

Detailed Yamaha PSS-480 review by Keen on Keys (3 videos on Youtube): https://www.youtube.com/watch?v=86lEtq4Qn1Y

SMF-Player PSS-780 (translates as much as possible from General MIDI to PSS – program changes, drum mappings) by Kéri Ferenc:

http://www.keriferenc.hu/?Hangt%C3%A1r:PSS_Editor