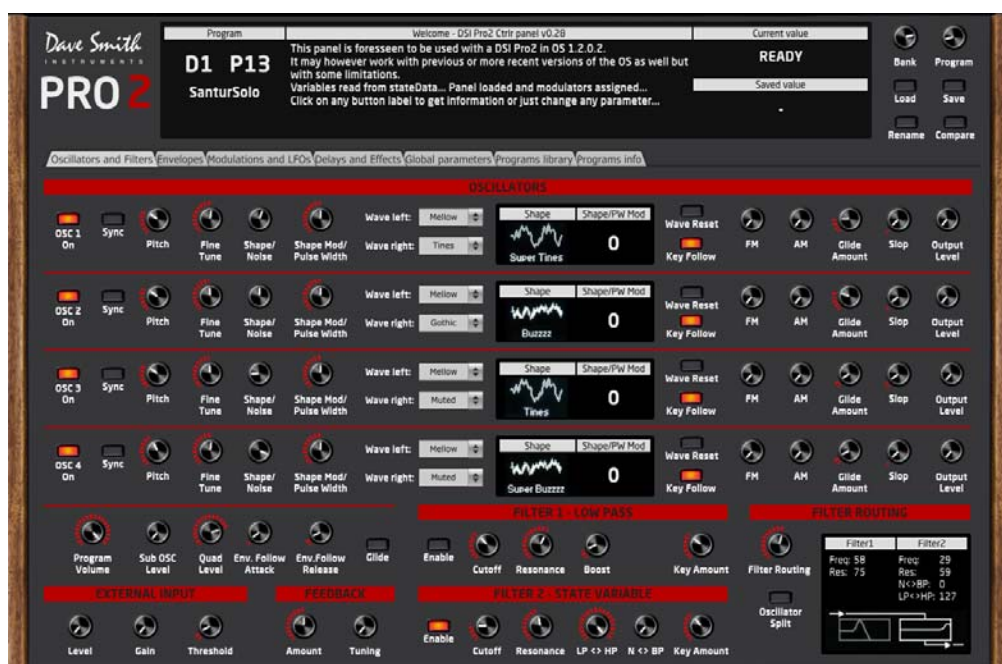




DSI Pro 2 Ctrlr panel documentation and instructions

V1.0 - 2017-03-20



Note: this Ctrlr Pro2 panel is free and provided without any warranty. It is your responsibility to take backups of your valuable Pro2 banks and programs if needed. ☺

Introduction

Hi! Thanks for having downloaded this Ctrlr Pro2 panel!

The Dave Smith Instruments Pro 2 synthesizer is a great instrument providing a lot of functionalities and a lot of parameters allowing us to create an infinite number of different sounds.

Due to this fantastic amount of possibilities, I wanted a better visualization of the parameters, a (sometimes needed) different way of editing them and a way to manage my Pro2 banks and programs. All of this with maybe some extra features...

The Ctrlr platform allowed me reaching that objective as it is made for building control panels for any synthesizer or midi device.

About 400 hours have thus been spent in building the Pro2 panel as it contains quite many features, as it was needed to reverse engineer the Pro2 sysex structure, to bypass some Ctrlr issues, to identify ways of working, to code them in Ctrlr, to manage the details related to each single parameter (and they are many!), to make a panel handling in a nice way with feedback messages, etc...

Now it is time for you (and me) to use it and to have fun in music making and/or sound design! Enjoy and post your comments/issues on the Ctrlr forum. I'll do my best to answer you and find solutions but please don't forget that this is hobby work for me 😊

Thanks to DSI to have made such nice synth as the Pro 2 and to Roman (*atom*) for having created this nice Ctrlr platform!

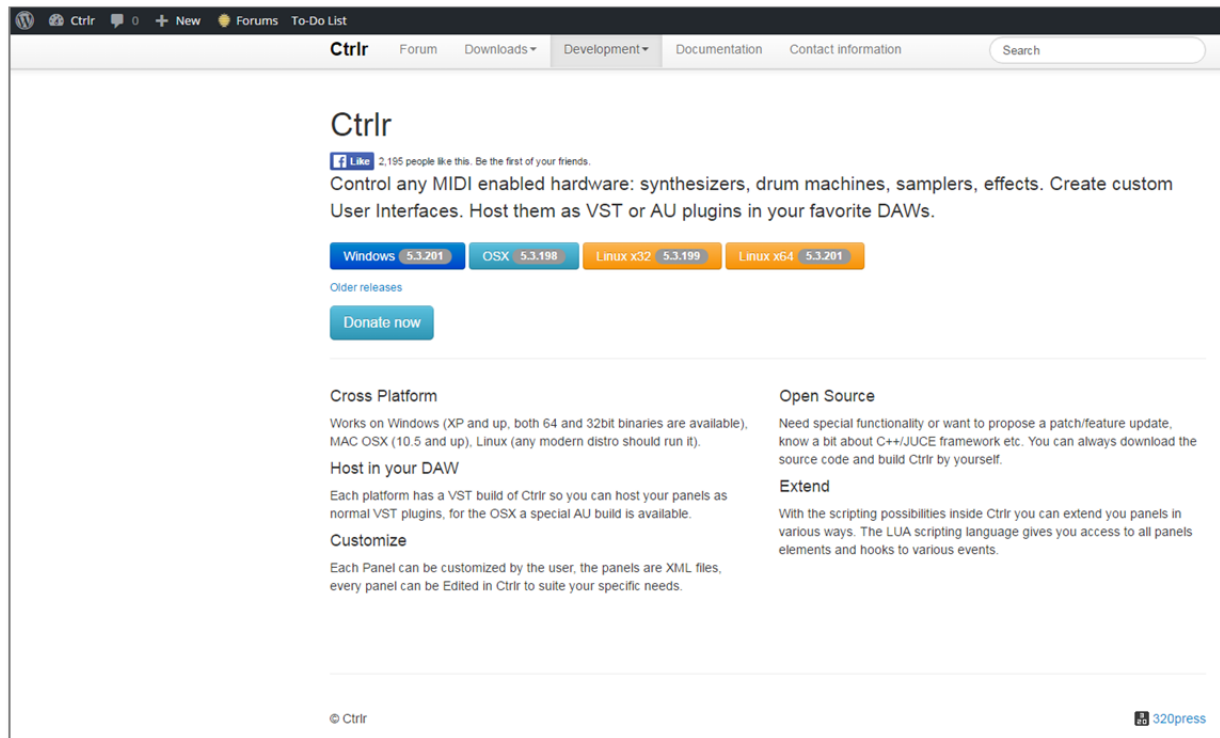
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Installation and startup

Installation of Ctrlr

Install Ctrlr by downloading it from the **ctrlr.org** web site.



You can see what the last version is according to the OS you are using and you can click on those OR you can also select **Downloads** → **Ctrlr** in the top menu.

Whatever you choose, you will anyway need to search for your last version by date and operating system in the next displayed screen:

The screenshot shows the 'Ctrlr Nightly builds' page. It features a title 'Ctrlr Nightly builds' in a stylized font. Below the title, it says 'Source code hosted at GitHub'. A table lists various build files with columns for Name, Last modified, Size, and Description. The table includes entries for Windows (win64, win32, exe) and Linux (x86_64, x86) builds, along with their respective last modified dates and sizes.

Name	Last modified	Size	Description
Ctrlr-5.3.122.win64.build.log	17-Jun-2015 11:15	626K	
Ctrlr-5.3.122.win32.build.log	17-Jun-2015 11:15	617K	
Ctrlr-5.3.122.exe	17-Jun-2015 11:15	12M	
Ctrlr-x86_64-5.3.122.linux.build.log	17-Jun-2015 07:39	3.8K	
Ctrlr-x86_64-5.3.122.sh	17-Jun-2015 07:39	9.1M	
Ctrlr-5.3.122.mac.build.log	17-Jun-2015 06:30	7.3M	
Ctrlr-5.3.122.dmg	17-Jun-2015 06:30	47M	
Ctrlr-x86_64-5.3.120.linux.build.log	12-Jun-2015 09:05	8.6K	
Ctrlr-x86_64-5.3.120.sh	12-Jun-2015 09:05	18M	
Ctrlr-x86_64-5.3.118.linux.build.log	13-May-2015 07:55	3.8K	
Ctrlr-x86_64-5.3.118.sh	13-May-2015 07:55	18M	

Installation of the panel

The zip file you downloaded from the Ctrlr Pro 2 panel web site contains:

- The *DSI Pro2_xxx.bpanelz* file (xxx indicating the panel version) that contains the **Pro 2 panel** in a format which is a compressed binary file of the panel and its resources
- This manual
- A folder called **Factory banks** that contains one sysex file for each factory bank on the Pro 2
- The *Neo Sans Std Regular* **font** file that is needed to reproduce the font used on the Pro 2 panel and OLED screen
- A few single program sysex files

Then proceed as follows:

1. **Decompress the zip file** in a certain folder as *My Pro 2* (or whatever name).
2. Inside the *My Pro 2* folder, create subfolder called *Sound library* (or whatever name), **copy the 4 factory bank files** and move (or copy) the different single programs files inside it. The idea is to use those bank files for quick start / training. Be aware that the bank files will be modified (it is the reason we keep a safe copy of the original ones even if you can download any factory banks from the Pro 2 later on using Midi OX or Sysex Librarian).
3. **Install the font on your PC** (on Windows 10, right-click and select Install)

Configuration and startup

To secure a bi-directional communication between the Pro 2 Ctrlr panel and the synthesizer, be sure to configure the following settings:

Setup on the Pro 2

- Switch your Pro 2 ON then check your Global parameters:
 - Midi Channel
 - Midi Param Send : set to **NRPN**
 - Midi Param Receive : set to **NRPN**
 - Midi Sysex Enable: set to **On**
 - Midi Sysex Cable
 - Midi OUT Select

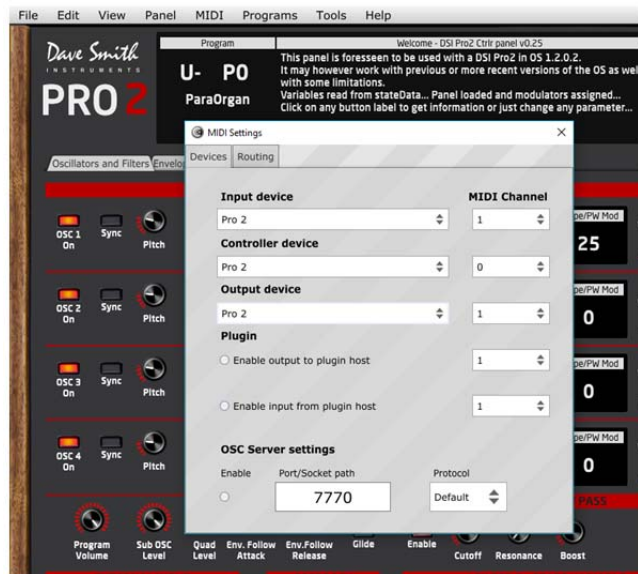
Setup of Ctrlr

- Launch Ctrlr and open the Pro 2 panel by selecting **File – Open panel** then selecting the *DSI Pro2_xxx.bpanelz* file (xxx indicating the panel version)
- Select **MIDI** and keep the mouse pressed to see the menu. The first time you will open the panel, you should see that -- None is indicated as Input/Controller/Output devices:



- Select **MIDI – Settings** and apply the following settings:
 - Input device: Port of your MIDI interface that is connected to the MIDI output of your synthesizer (you can also use the synthesizer's USB connection). It is Pro 2 in the image.
 - Input device MIDI Channel: 1 or the one selected on the Pro 2
 - Controller device MIDI Channel: 0 (All)
 - Output device: Port of your MIDI interface that is connected to the MIDI input of your synthesizer (you can also use the synthesizer's USB connection). It is Pro 2 in the image.
 - Output device MIDI Channel: 1 or the one selected on the Pro 2

After the change to “Pro 2” in devices, you will see each time a green confirmation bar at the bottom of the screen.

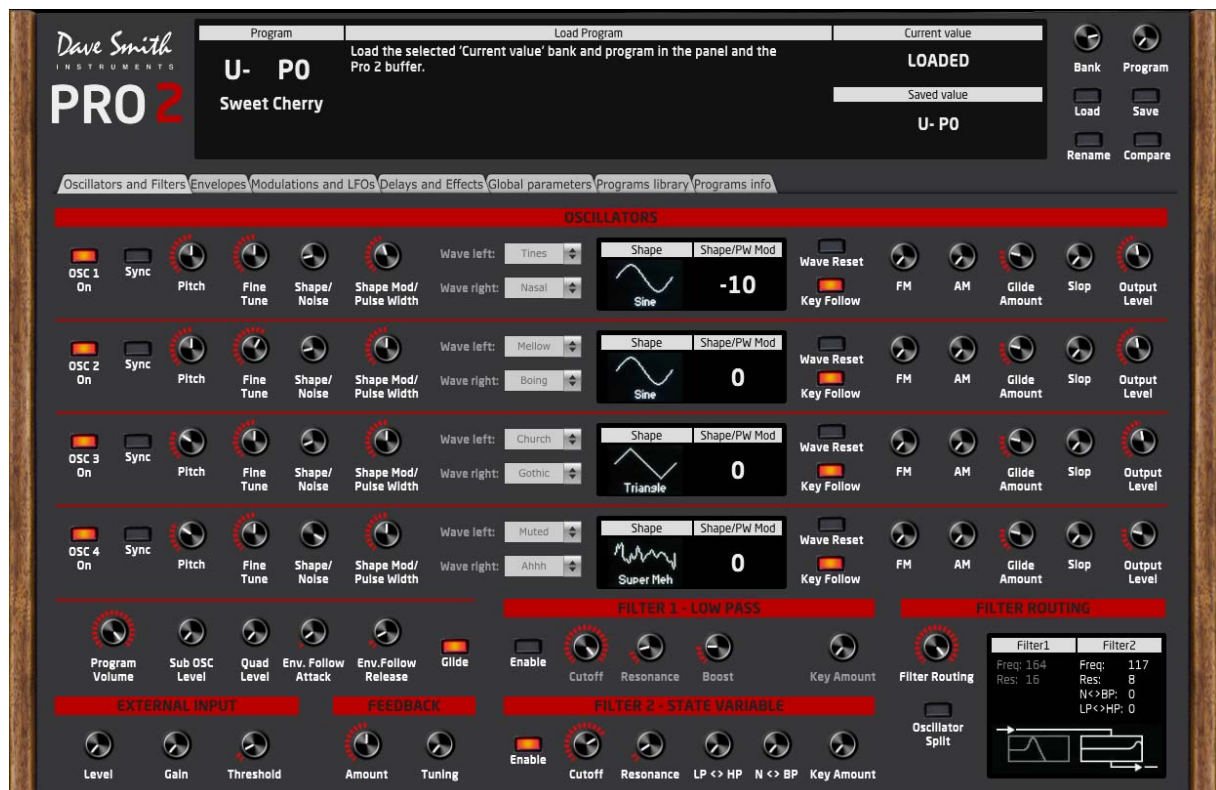


- Save the panel under another name, *DSI Pro2* for example. A *.panel* file will be created.
- Close the panel then close Ctrlr
- Re-open the *DSI Pro2* panel; your Midi settings are now directly correct as they have been saved in the *DSI Pro2.panel* file.

Startup

Read this manual and especially the [Way of working](#) to have a general idea.

To check that the panel works fine, load one of the provided single program sysex file, for example *F7P1 - Sweet Cherry.syx* (see [Load and Save from main area of the panel](#) on page 12). You should get the following results:



Modify a few parameters and verify the bidirectional behavior (see [Way of working](#) on page 11). To see a change on the Pro 2 synthesizer you must have the correct screen displayed on the OLED.

Check that the font has been correctly installed:

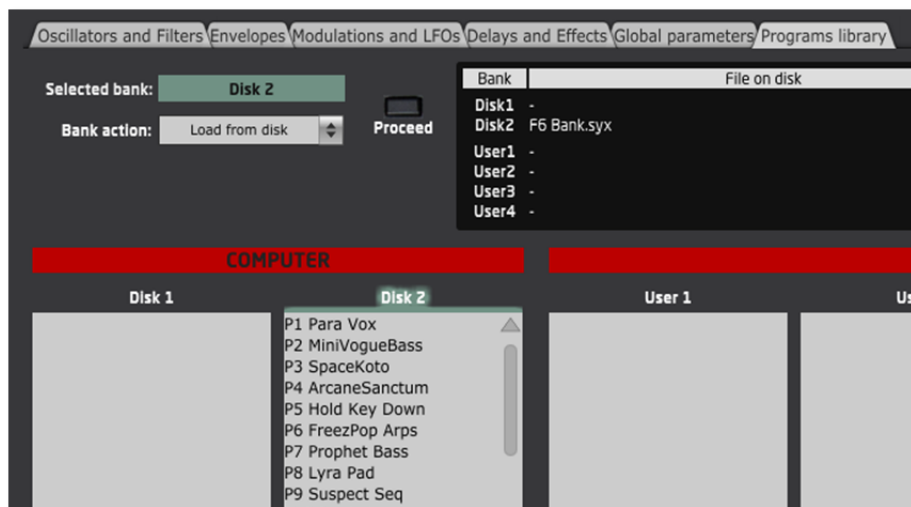


As you can see, on this picture the button labels are not the same and the Envelope Follow Release not displayed correctly.

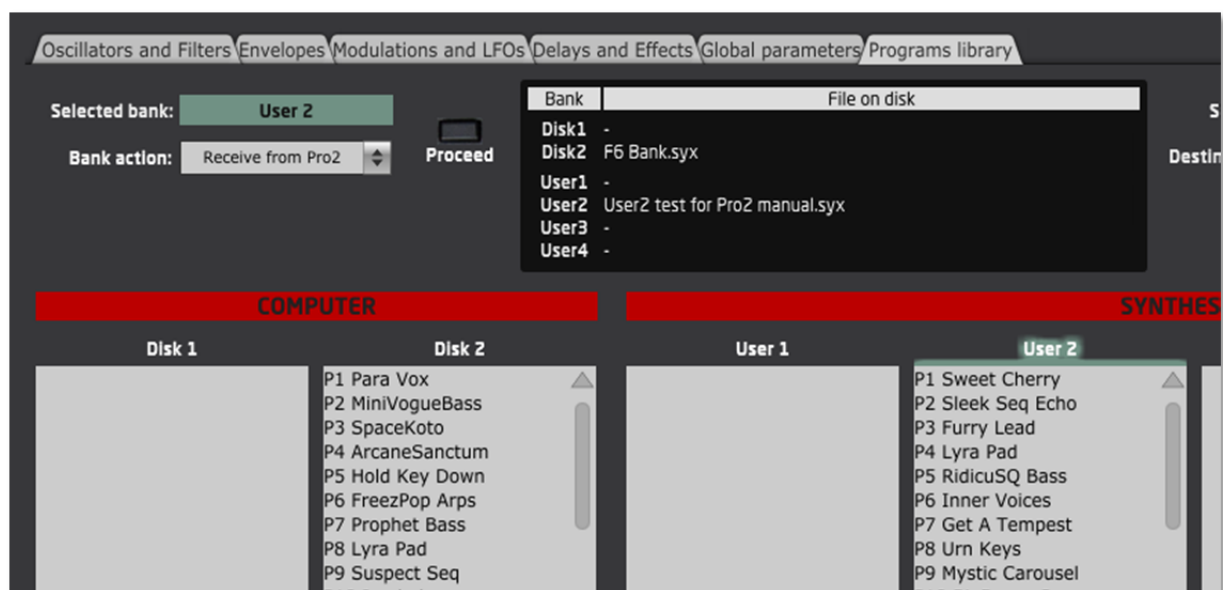


The button labels are shown correctly after the font installation.

Switch to the **Programs library** tab, click on the Disk 1 or Disk 2 label then load one of the provided bank in the D1 or D2 bank (see [Bank management and initial actions](#) on page 21). You should get the following result.



Click on one of the User bank label then receive that bank from your Pro 2.



Closing the panel

It is **very important** to understand the way Ctrlr is working on closure...

You can terminate your work in two different ways:

- Closing Ctrlr (File-Quit or Window red cross) without closing the panel: Ctrlr will save its state and maintain all parameters as you left.

If you close the panel, be sure to have saved your work (in fact you should always save your work at regular interval – this is just best practice with any software). When you will re-open the panel, I'm advising to reload your program from bank or sysex to be sure you start from the right situation and that things are in sync.

Features

You will find the following features in the Pro2 panel:

- Pro2 interface with similar look as actual synthesizer
- Parameters grouped in different tabs
- Information about the meaning of each parameter (extract from the manual), its current value and its saved value of the loaded program by simple click and without modifying the value
- Bi-directional behavior: modifying a parameter on the panel modifies it on the synth; modifying a parameter on the synth switches automatically (optional) to the corresponding tab and displays on the computer the parameter information, the current value and the saved value
- Visual feedback by using “LED” ring buttons and secondary screens
- Envelopes graphs handled by mouse or classical DADSR rotary buttons
- All parameters and wave shapes display (no PW) for the four oscillators at once
- Oscillators On/Off buttons
- All parameters and routing display for the two filters at once
- Filter 2 N/BP switch replaced by rotary button
- Delays On/Off buttons
- Load / Save programs from banks and from individual .syx files
- Easy program renaming
- Bank management: 2 Disk, 4 Factory and 4 User banks
- Progress bar when receiving/sending bank
- Program management
- Programs info (listing/exporting current values, saved values, current and saved values, differences only, full comparison of two programs, differences between two programs)
- Program compare (saved versus current values)
- Load and edition of Pro2 Global parameters
- Different extra switches: Bank AutoSave, Proceed confirmation for program actions, Tab switch...
- Program and Global parameters adapted according to last 1.2.0.2 Pro2 OS
- Pro2 sysex implementation documentation
- ...

In the backlog (but no promises...):

- VST/AU plugin version
- Morphing between two programs
- Glide parameters
- Program categories
- Arpeggiator settings and commands
- Sequencer settings and commands (new tab)
- Explanations for Global parameters in combo boxes
- Load of adapted P12 programs (possible in my opinion)
- Load Pro 2 buffer into panel

Way of working

As you will discover by yourself, the usage of the panel is pretty straightforward but there are anyway different specific things you should know... ☺

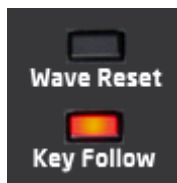
Using the buttons and modifying parameters

You modify parameters using a rotary buttons by clicking on the button then moving the mouse cursor vertically up or down. Clicking on the button displays the parameter information, its current and saved values.



You can also modify any rotary button based parameter by hovering the mouse on the button then using the mouse scroll wheel. Please notice that if you are using this method, the parameter information and saved values of the current parameter will not be displayed (*will be changed in a coming version if possible*).

Push buttons are modified On/Off by pushing them (what a surprise...).



Parameters presented as pulldowns are modified by opening the pulldown and selecting one of the pulldown items.

Getting information on a parameter and viewing its current and saved values

Clicking on the label of a button (rotary or push) or of a pulldown displays the parameter information, its current and saved values. The same is displayed when you directly change a parameter.

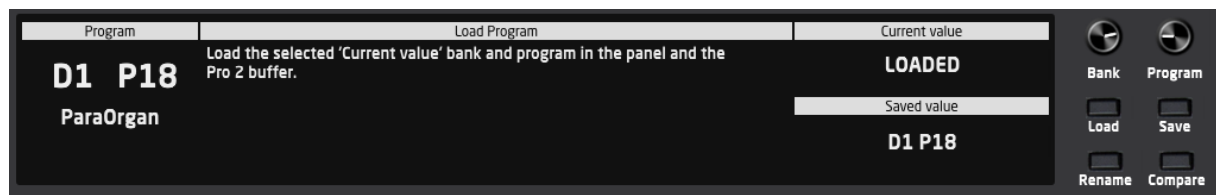
Program	LFO Slew Rate - LFO 1	Current value [0...127]
D1 P18	Slew rate is defined as the maximum possible rate of change of a signal. The effect of the Slew Rate control is most obviously heard on Pulse and Random, shapes that normally change state virtually instantaneously. As Slew Rate increases, those changes are drawn out, elongated, and the result is a sort of smoothing effect.	61
ParaOrgan		Saved value
		0

Note: some global parameters do not have this yet...

Quick reset to default value

Most of the rotary knobs have default values set and you can quickly revert to this preset default value by double-clicking on the button.

Load and Save from main area of the panel



The main area of the panel allows selecting the current bank and program as on the Pro 2 except that you need to use the Load or Save buttons afterwards.

The **Bank** rotary button lets you select the current bank among U1 to U4, F5 to F8, D1, and D2:

- The Dx banks are Disk banks and are banks loaded in the panel but only existing on the computer
- Ux and Dx banks must be loaded before using them (in Programs library tab)

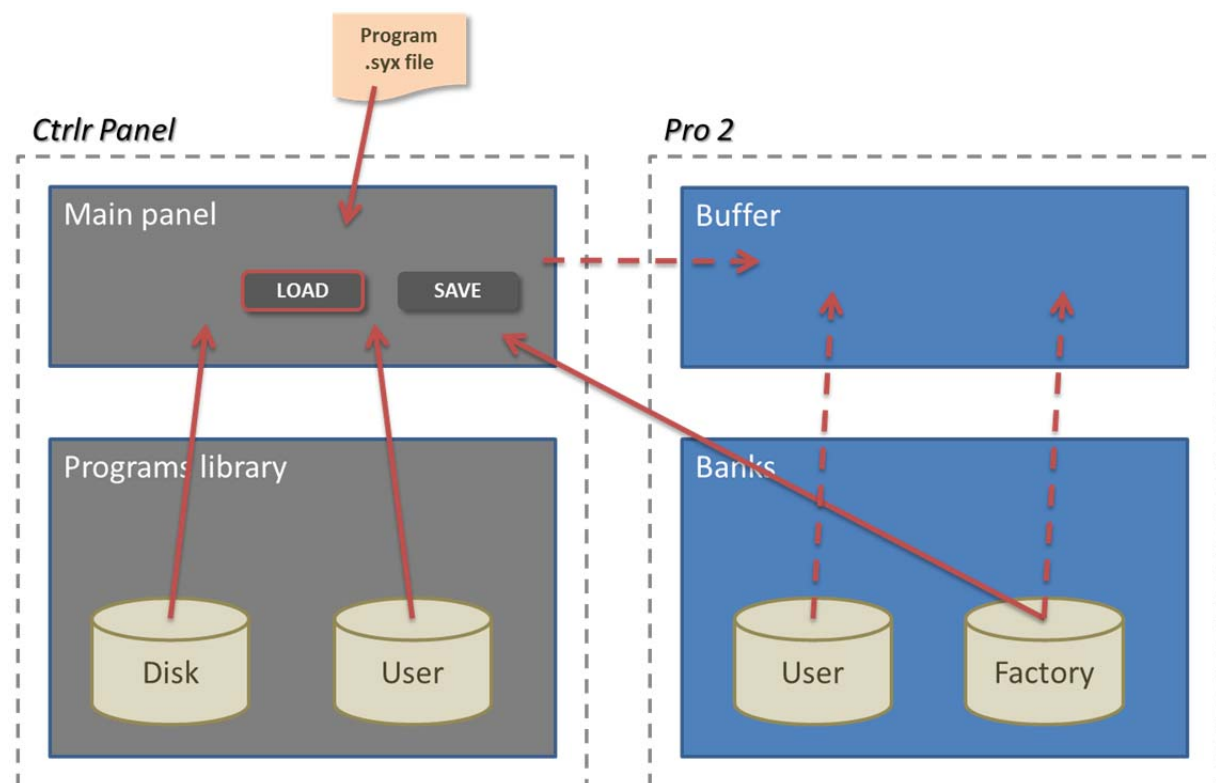
The **Program** rotary button lets you select the current program:

- The selected 1-99 program is displayed in Current value if a bank has been loaded
- When the button is set to Program 0, whatever bank, a sysex file Load/Save can be performed

Load and Save operations are possible when a program has been selected (some checks are done 😊).

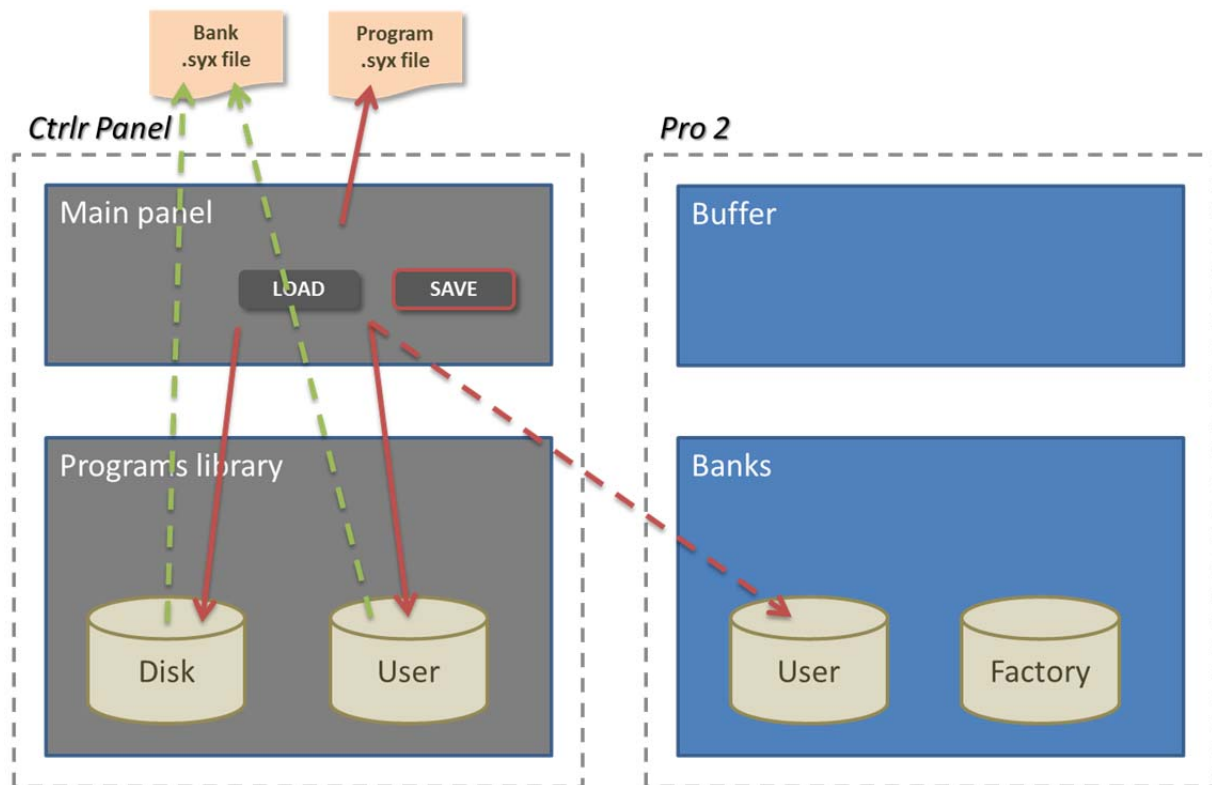
The **Load** button offers the following possibilities and works as follows:

- Load a single program .syx file in the panel
- Load a program from the D1, D2 banks (if loaded)
- Load a program from the U1-U4 banks (if loaded)
- Load a program from the F5-F8 banks (the program data comes from the Pro 2)
- The loaded program is also available in the Pro 2 buffer (if modified, it must be saved – see Main panel Save)

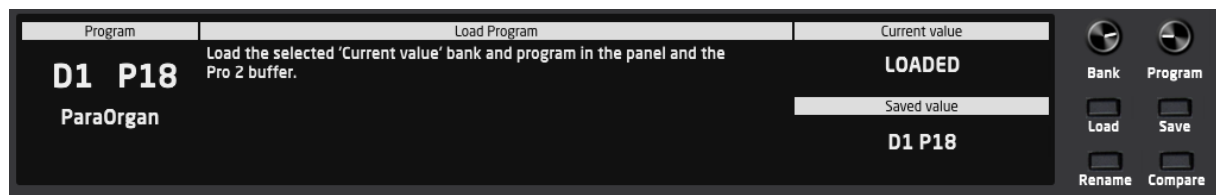


The **Save** button offers the following possibilities and works as follows:

- Save the current program to .syx file
- Save the current program to the D1, D2 banks (if loaded)
- Save the current program to the U1-U4 banks (if loaded)
- When saved in a bank, the corresponding bank file is also updated on the computer (when BankAutoSave is On)
- When saved in a User bank, the program is also saved in the corresponding Pro 2 User bank

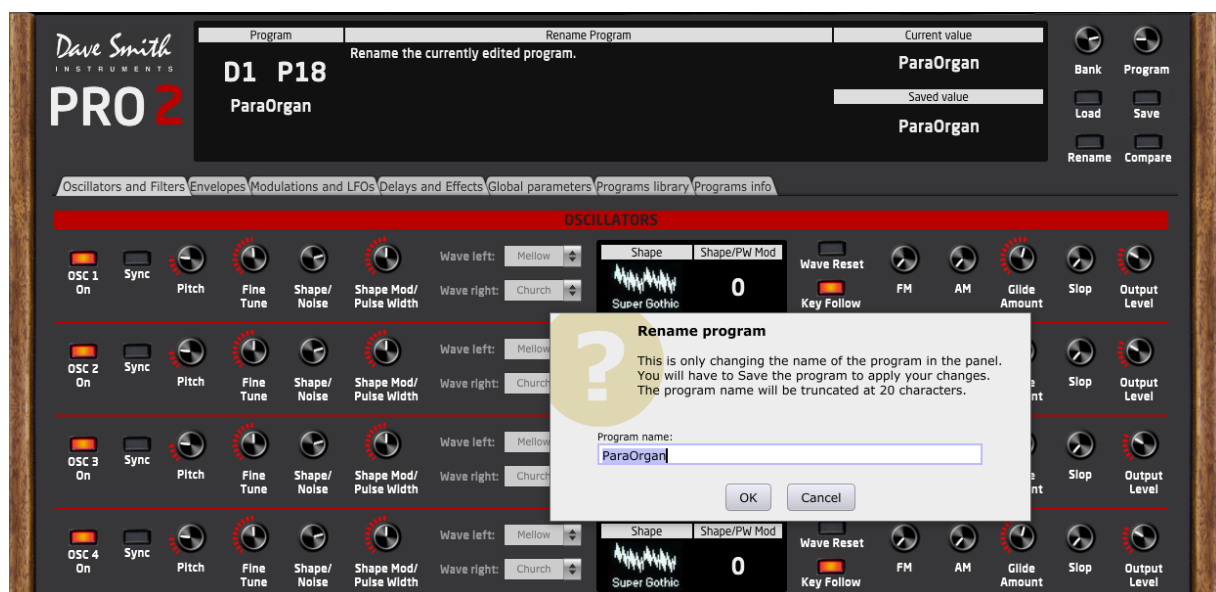


Rename and Compare from main area of the panel

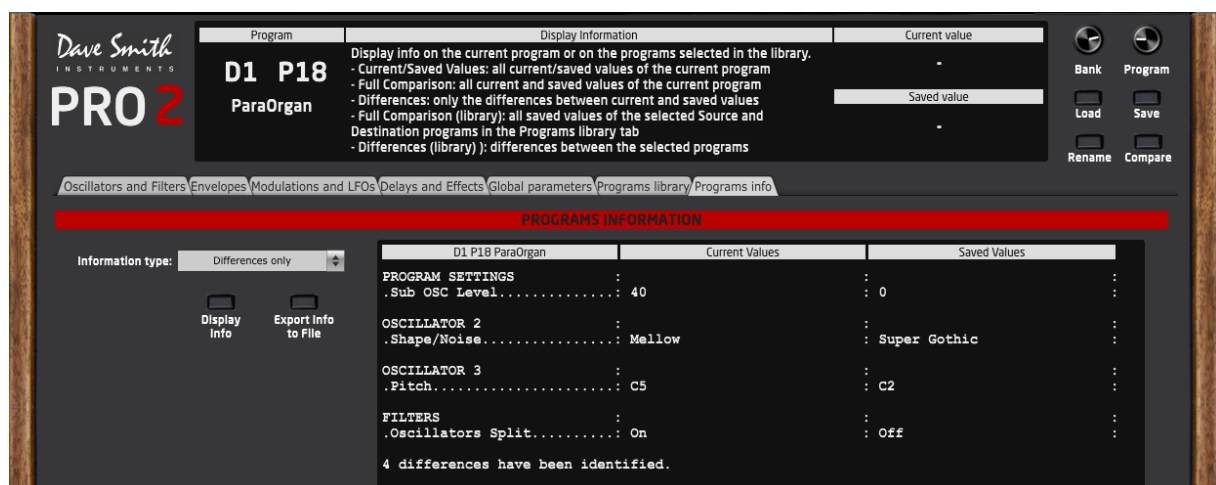


On the main area of the panel, the **Rename** button allows you to...rename the current program while the **Compare** button allows you to get a comparison between the current and the saved values of the current program (differences only).

By clicking the **Rename** button, a popup allows editing the program name. Even if one can enter more than 20 characters in the popup, the program name will be truncated to 20 characters max as on the actual synth.

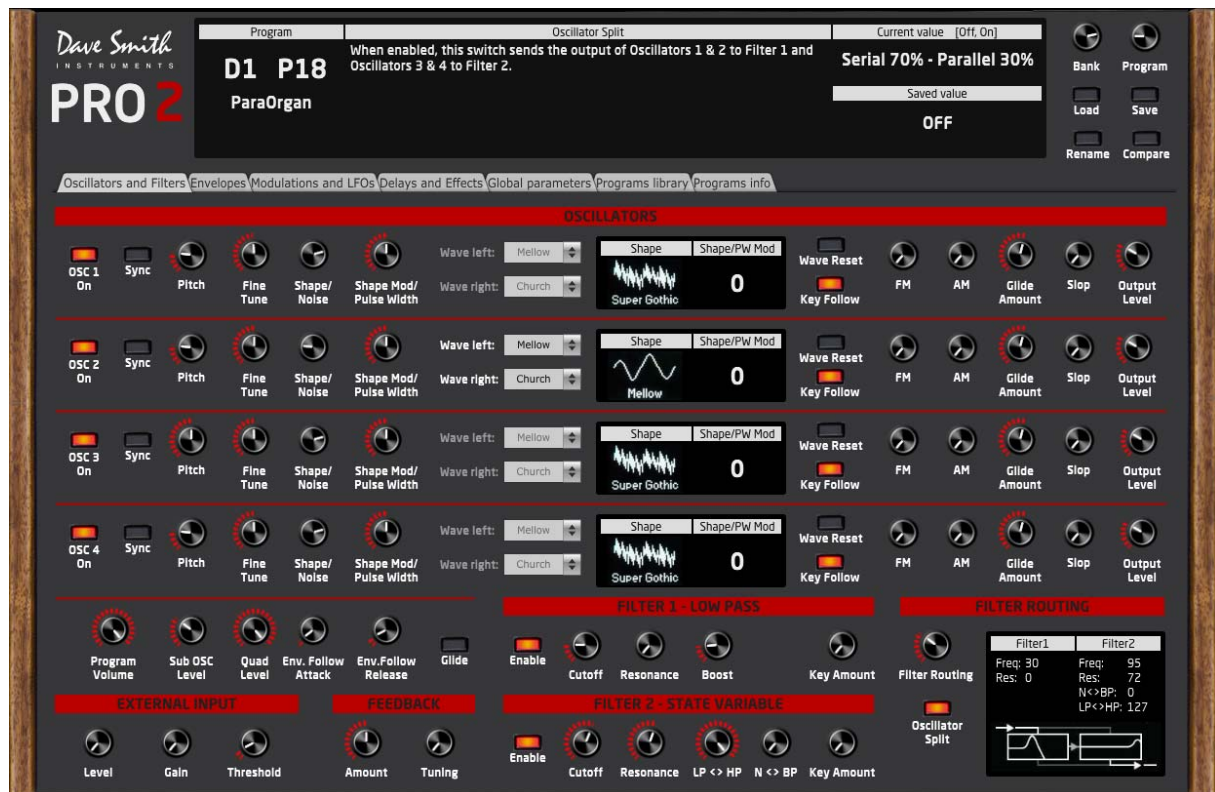


By clicking the **Compare** button, the current tab is switched to the Programs info tab and a list of the differences between the current and the saved values is presented.



Oscillators and Filters tab

In the **Oscillators and Filters** tab, you have access to Oscillators and Filters parameters, External input, Feedback and common program parameters (Volume, Quad level, Envelope follower, Sub Oscillator level) with some information displayed in different secondary screens looking like what you have on the Pro 2 synthesizer itself.



As you can see, the wave shapes are displayed but unfortunately I didn't manage to have them calculated so they are static and you will not see the effect of the PWM on them. It is the reason I decided to show you the PWM value on each secondary screen.

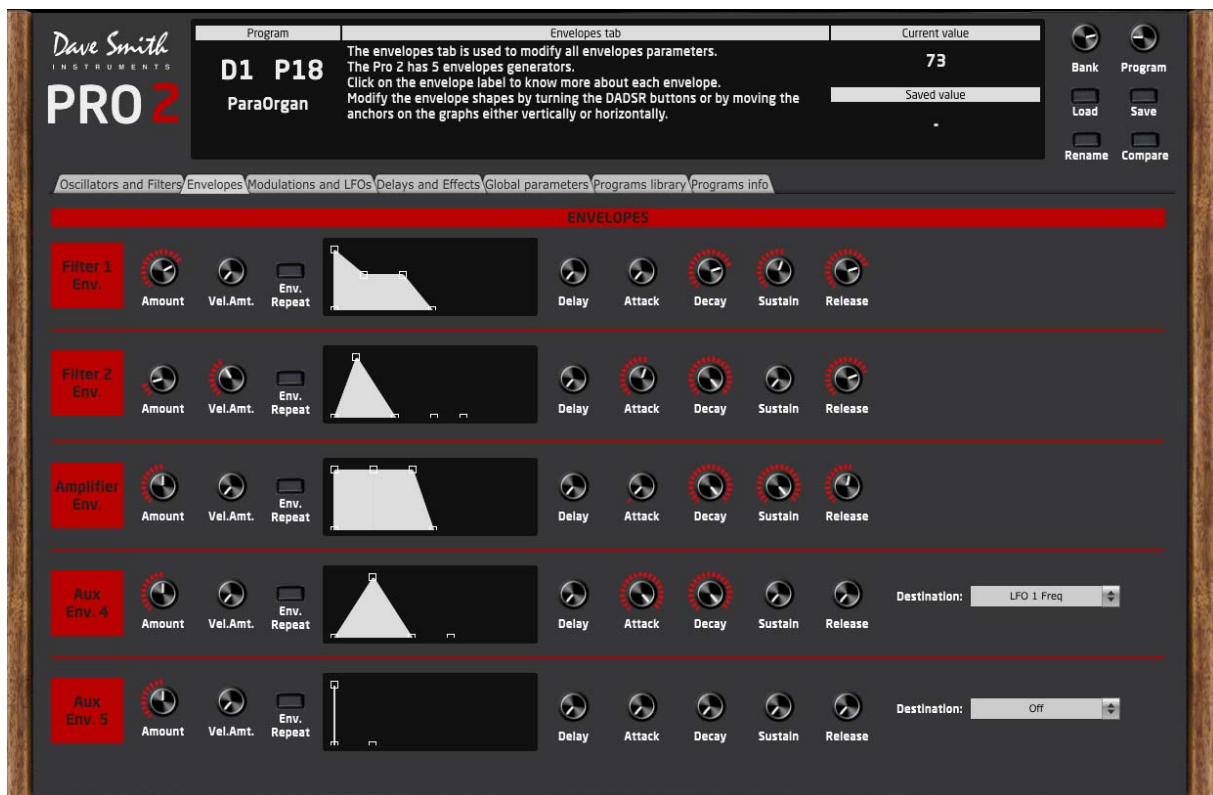
Speaking about Oscillators, you have a feature not found on the synthesizer (☺): you have the possibility to **switch each oscillator On or Off very easily**. No rocket science here... it just remembers the wave shape of the oscillator then switches between that wave shape and the *Osc Off* value.

Nothing special to say on the filters side... The Filter enable buttons are working together with the Oscillators Split one and the selection displayed on the Filters secondary screen (including the influence of Filter routing which is displayed as a % in the Current and Saved values of the main screen). Parameters are enabled/disabled in function of the Filter Enable buttons.

Maybe worth mentioning is that I replaced the Filter 2 BP ON/Off switch by a **rotary button N<>BP** (Normal to Band-Pass) as in fact, as written in p101 of the manual and confirmed by DSI, the parameter is in fact *continuously variable* between Normal and Band-Pass. On the synth, you can achieve the same by switching to the xxx screen then use the top encoder above xxx instead of using the BP push button on the panel.

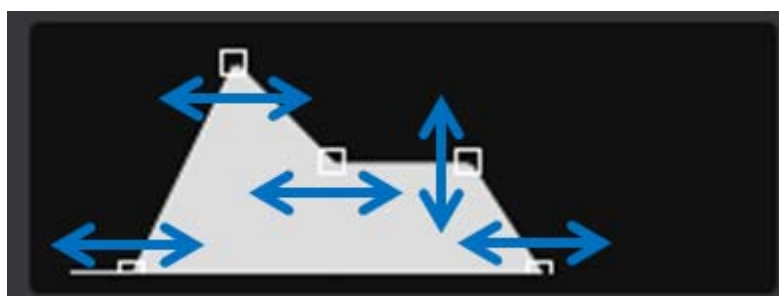
Envelopes tab and graphs

In the **Envelopes** tab, secondary screens are used to display and modify the shapes of the 5 envelopes.



By clicking on the envelope red boxed label on the left side of the panel, you will get more information about each envelope.

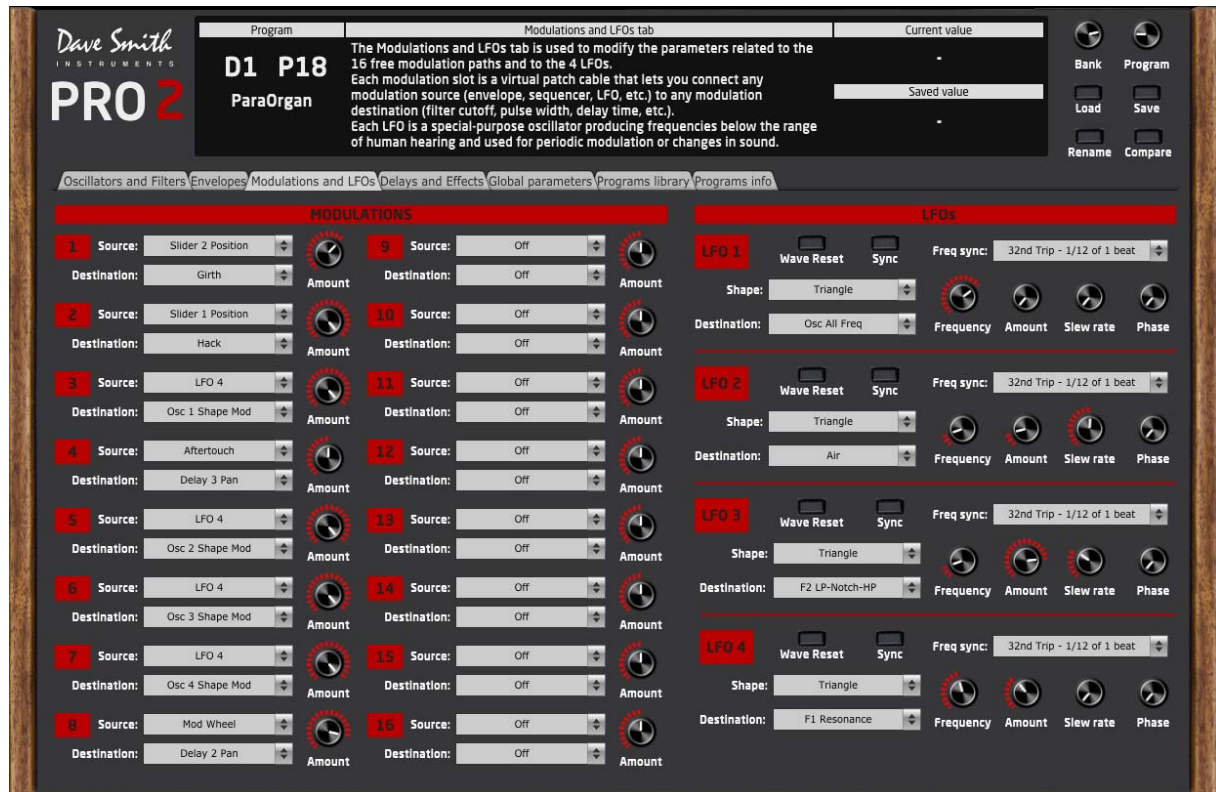
You can modify the envelope shapes by either turning the DADSR buttons or by using the mouse and moving the anchors on the graphs either vertically or horizontally.



When moving the anchors, the corresponding DADSR rotary knob will also turn and the parameter information, current and saved value be displayed.

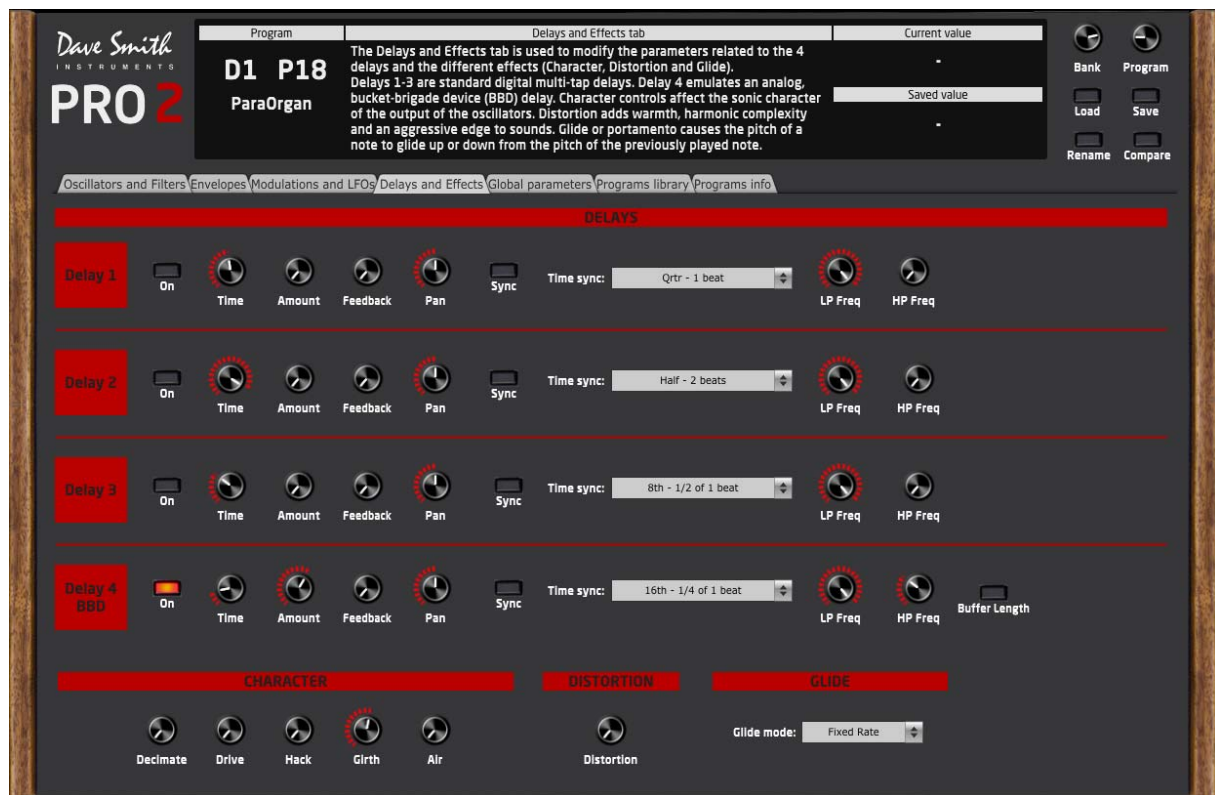
Modulations and LFOs tab

In the **Modulations and LFOs** tab, you have access to the settings of the 16 modulation paths and the 4 LFOs.



Delays and Effects tab

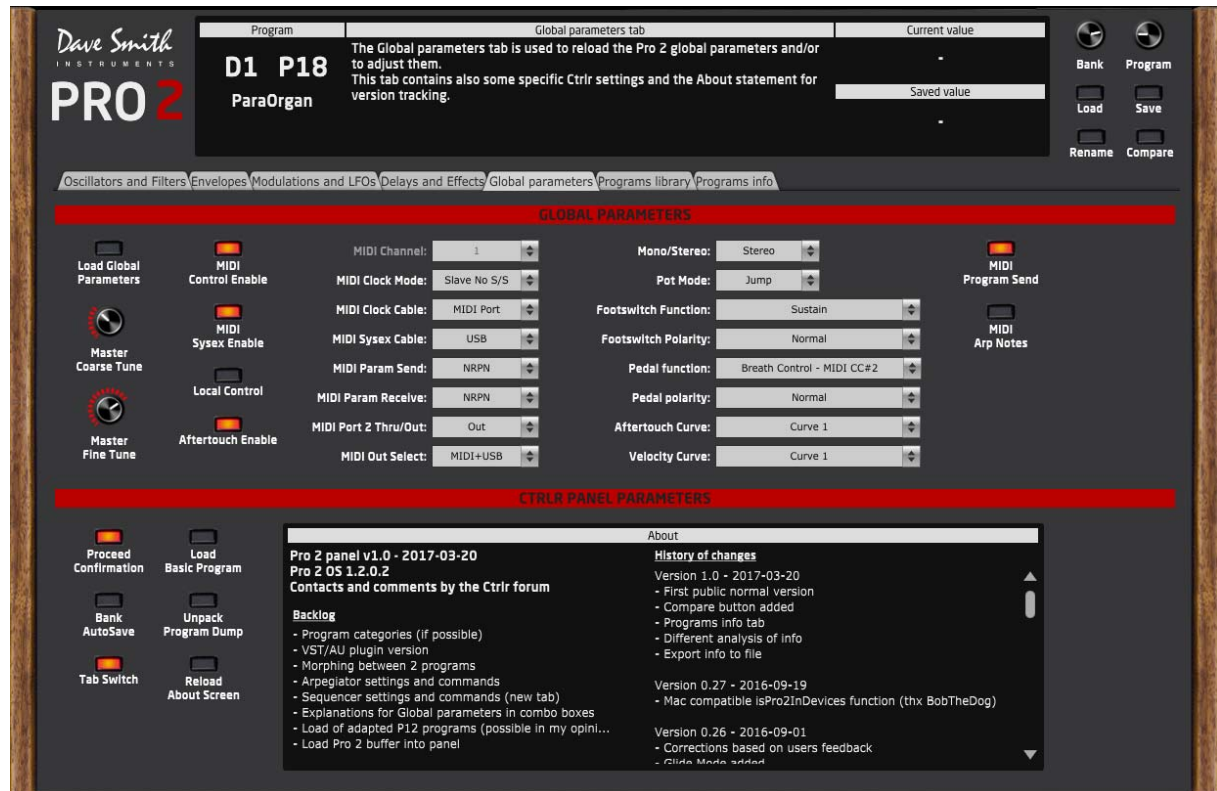
In the **Delays and Effects** tab, you have access to settings of the 4 delays, the 5 character effects, the distortion and, in a coming version, the glide parameters.



Global parameters tab

In the **Global parameters** tab, you have access to all Global parameters (except Midi Channel that is read-only) and some Ctrlr parameters that I thought would be interesting.

You can also look at the History of changes and have an idea of the backlog of future improvements.



Panel specific parameters

In the **Global parameters** tab you have also the possibility to adjust different parameters that will affect the behavior of the panel.



Proceed confirmation: getting a prompt (or not) when proceeding Program actions in the Programs library tab

Bank AutoSave: This is an important one!

Disk banks (D1, D2) have their data loaded from files residing on the computer disk.

User banks (U1-U4) have their data either loaded from files residing on the computer disk or coming from the Pro 2 (in that case, they should be saved on computer disk if you want to re-use them directly the next time).

So, changes done on those Dx and Ux banks are done in memory but should also be reflected in the related files. You can have this Save done automatically after each Bank or Program actions OR you can switch this off and Save the bank on disk when you would estimate appropriate. In this case, banks to be saved will be indicated with an *

Tab switch: decide (or not) to have the panel automatically switching to the tab containing the parameter that you change on your Pro 2 synth. It is a nice way to get a confirmation of the change but also to see the information about the parameter (should you not know it by heart)

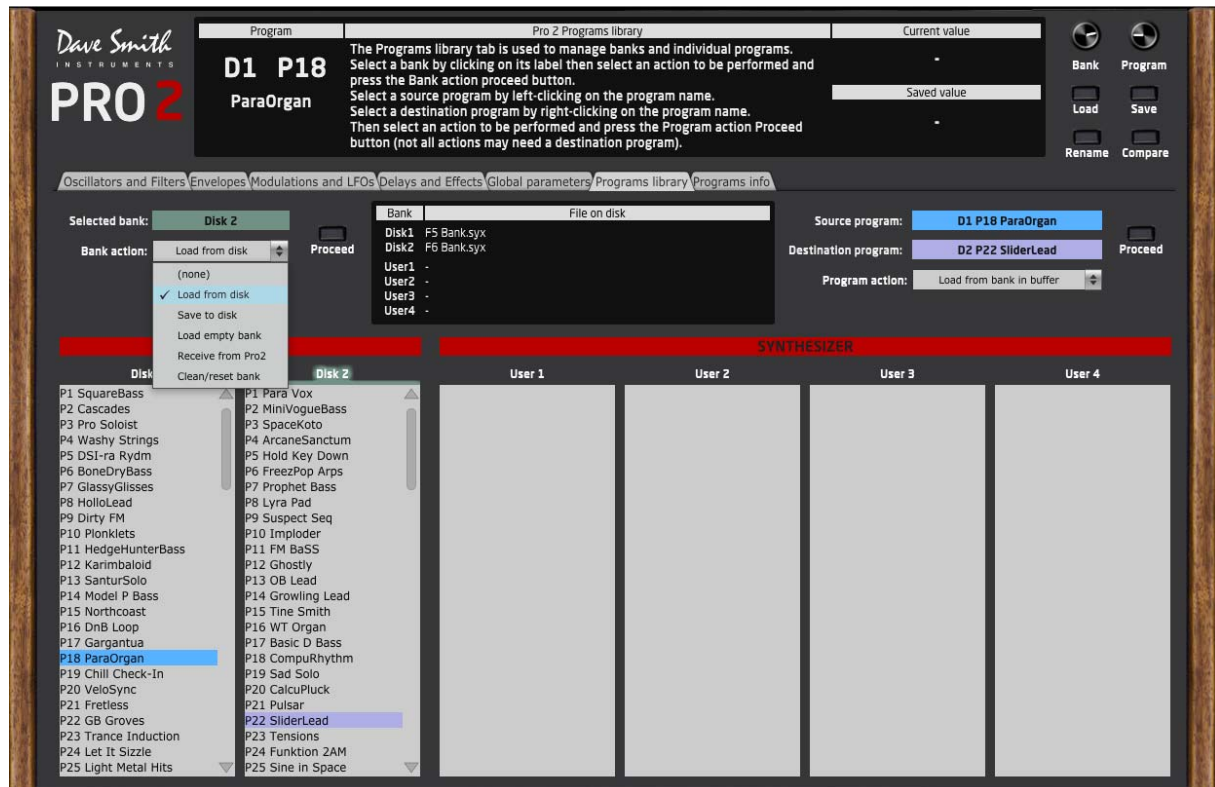
Load Basic Program: load a Basic program in the panel (not in the Pro 2 buffer).

Unpack Program Dump: was used for tests but kept it available. Reads a packed program data or packed program buffer data dump sysex file, unpack the data and save the unpacked data in another sysex file.

Reload About Screen: doing what it is stated... reload the content of the About screen when the content has been changed in the code (not really interesting for you)

Bank management and initial actions

The **Programs library** tab allows you to perform Bank and Programs operations.



You have **2 Disk banks** and **4 User banks** available.

Disk banks only exist in the computer world (memory and file); changing them is not affecting the synthesizer and they can be used to assemble programs in some kind of offline mode.

User banks are the U1-U4 banks of the Pro 2. They are loaded in memory and have a counterpart as file but their modifications are reflected on the synthesizer.

The underlying file behind a loaded bank is indicated in the secondary screen (filename only).

When a Bank is loaded, its Programs are available for selection by the main panel Bank and Program buttons.

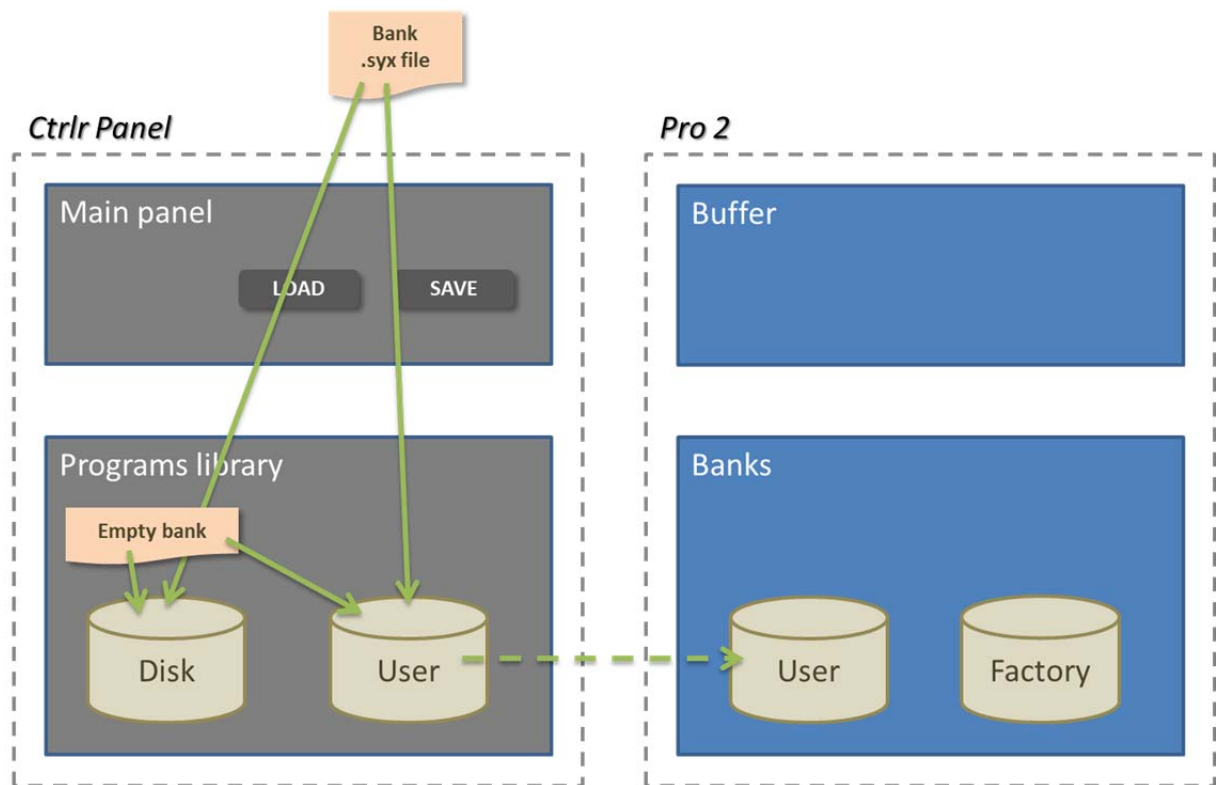
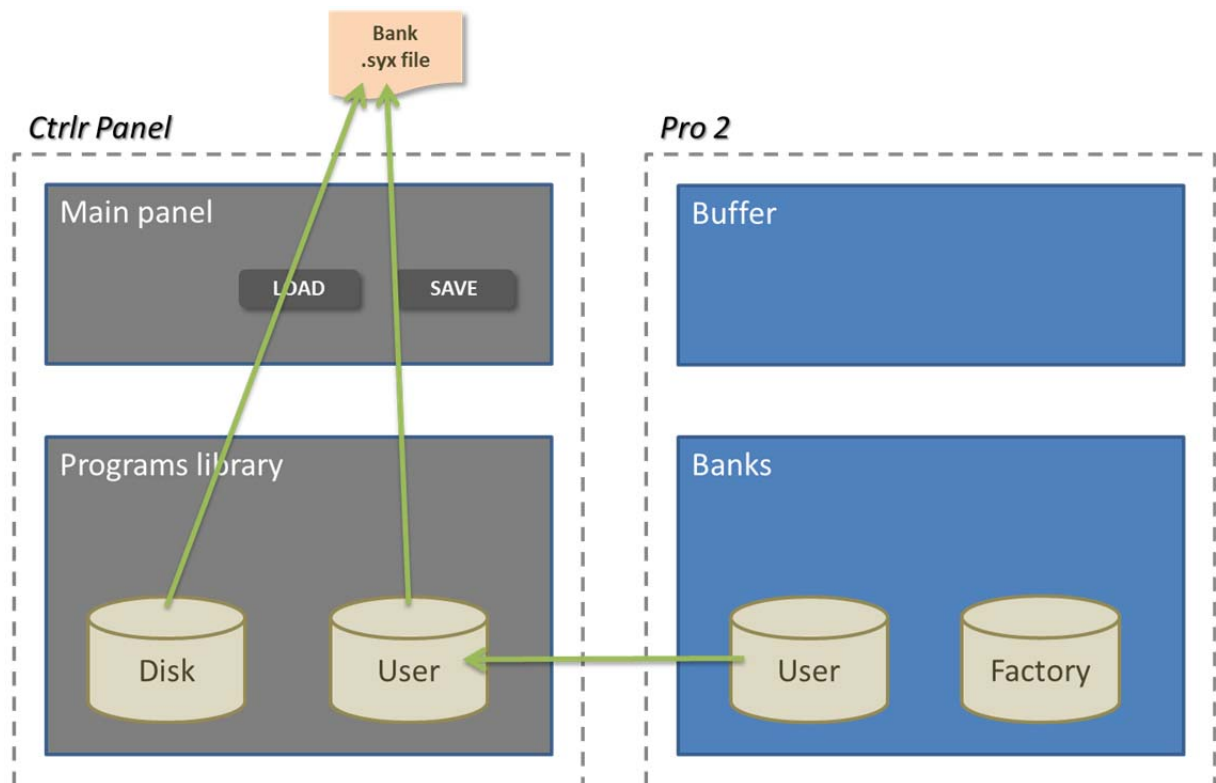
The following Bank operations are available:

- Load a full bank from a .syx file in Dx, Ux (if Ux then the bank is also replaced in Pro 2)
- Save a full bank to a .syx file
- Load an empty bank (99 basic programs) in Dx, Ux (if Ux then the bank is also replaced in Pro 2)
- Receive a Ux bank from Pro 2 (optional: save bank to disk after Receive)
- Clean / Reset a bank in the panel

Look at next page for a graphical description of those possibilities.

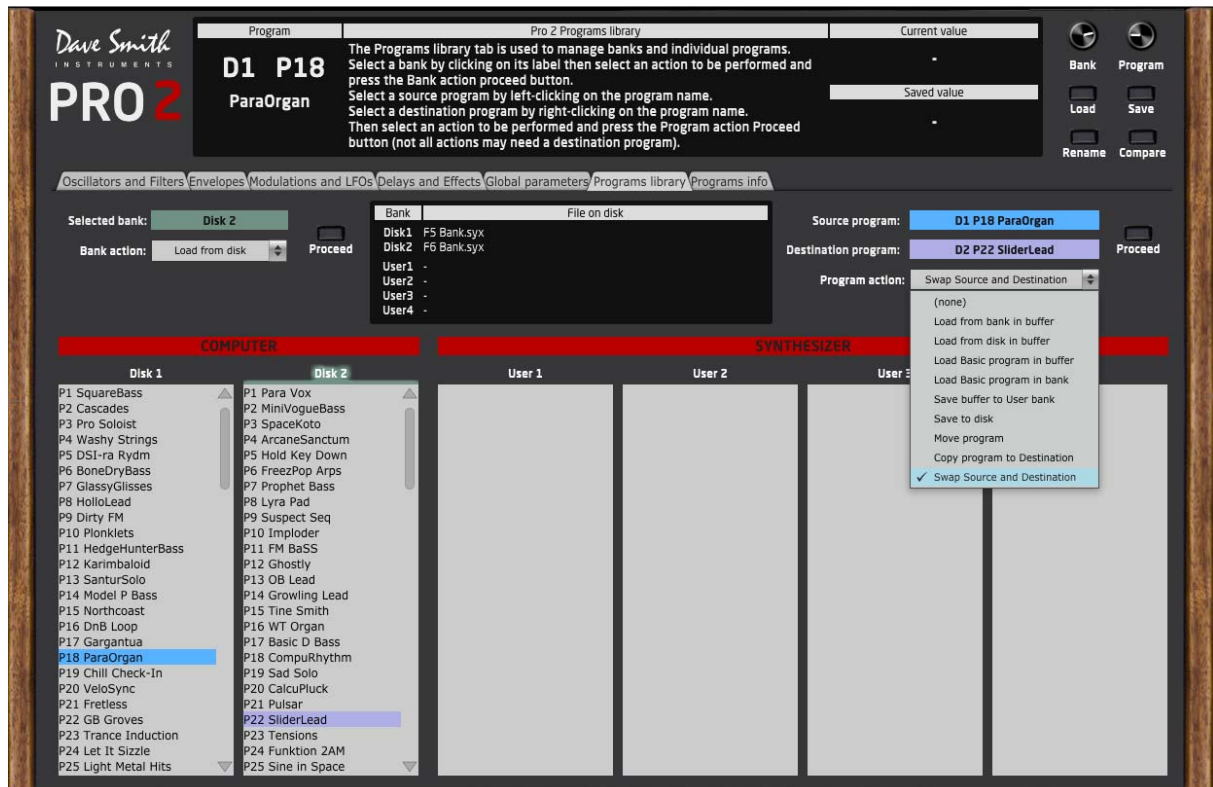
Usage: select a bank by left-clicking on one of the six bank labels; select an action from the drop-down menu then click on the Proceed button.

Load bank actions:

**Save bank actions:**

Program management

The **Programs library** tab allows you to perform Bank and Programs operations.



Programs can be selected as soon as some banks are loaded.

A **Source program** is selected by **left-clicking** on a program name; a **Destination program** by **right-clicking** on a program name.

The following program operations are available:

- Load a Source program from Bank (better visibility of all programs and easier selection of any Dx, Ux program than when using the main panel Load button). The loaded program is also available in the Pro 2 buffer and, if modified later on, will have to be saved – see Main panel Save.
- Load a basic program in buffer and panel
- Load a single program .syx file in Dx, Ux (optional: load in panel and in Pro 2)
- Load a basic program in Dx, Ux (optional: load in panel and in Pro 2)
- Save the Source program to a .syx file
- Save the Pro 2 buffer to a User bank (the buffer data is not loaded in the panel)
- Move a program from Source to Destination (the Source program is replaced by a Basic program)
- Copy a program from Source to Destination
- Swap Source and Destination programs

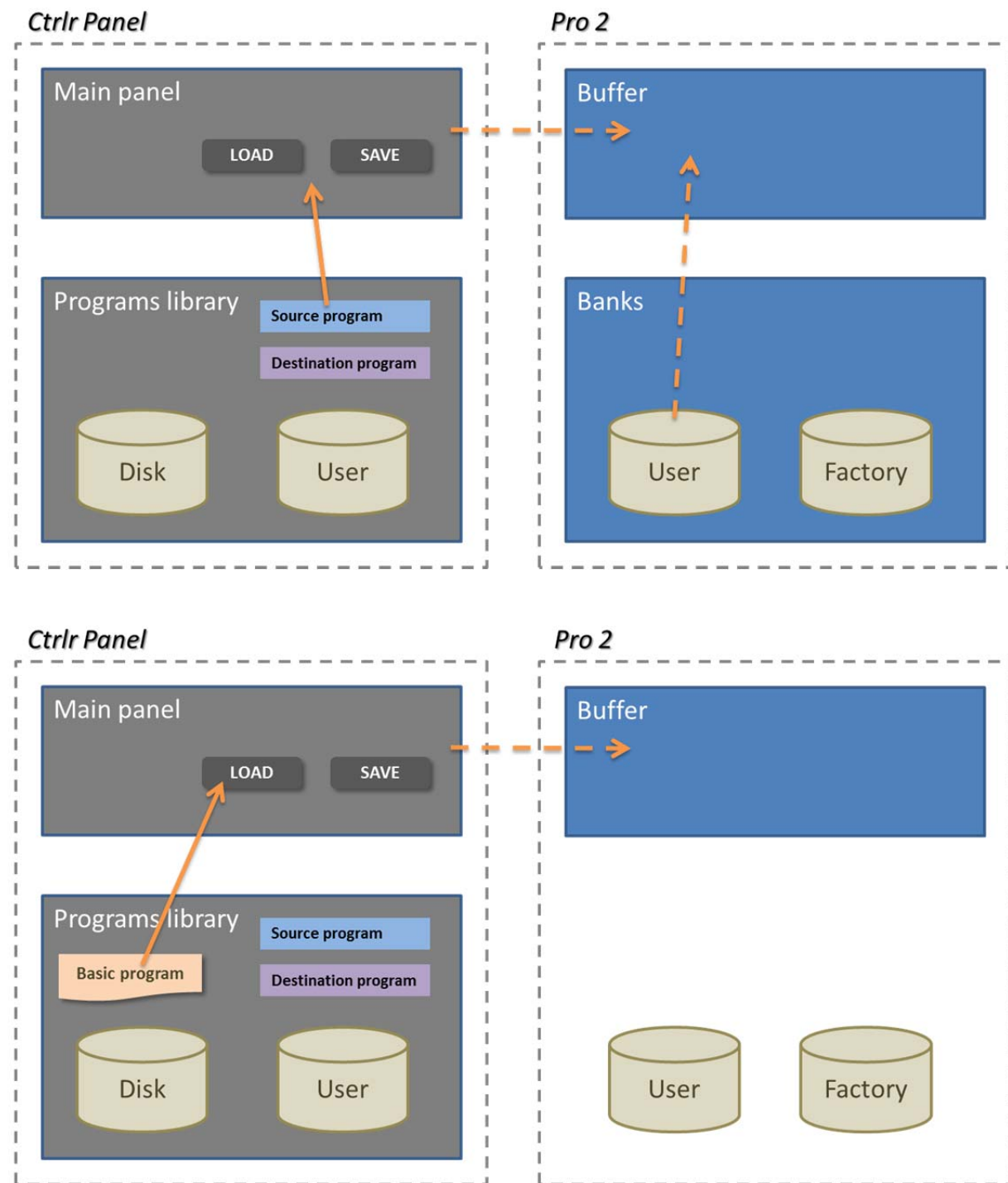
Please note that:

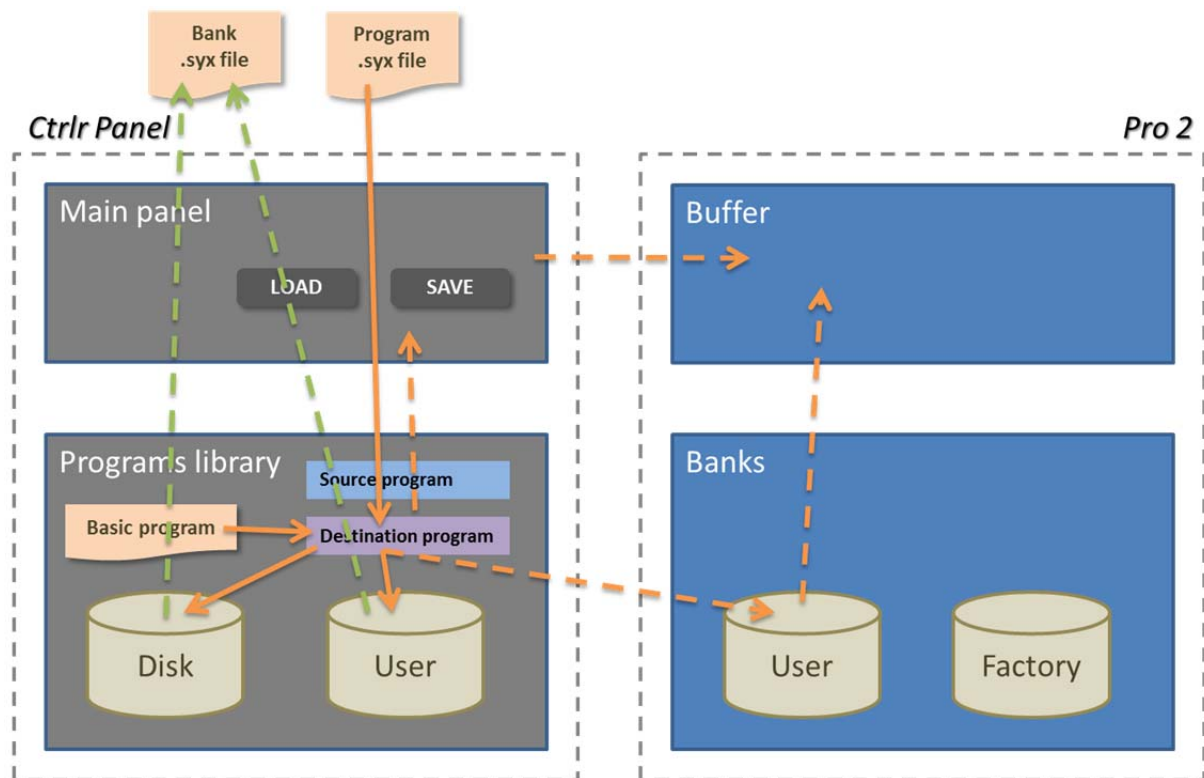
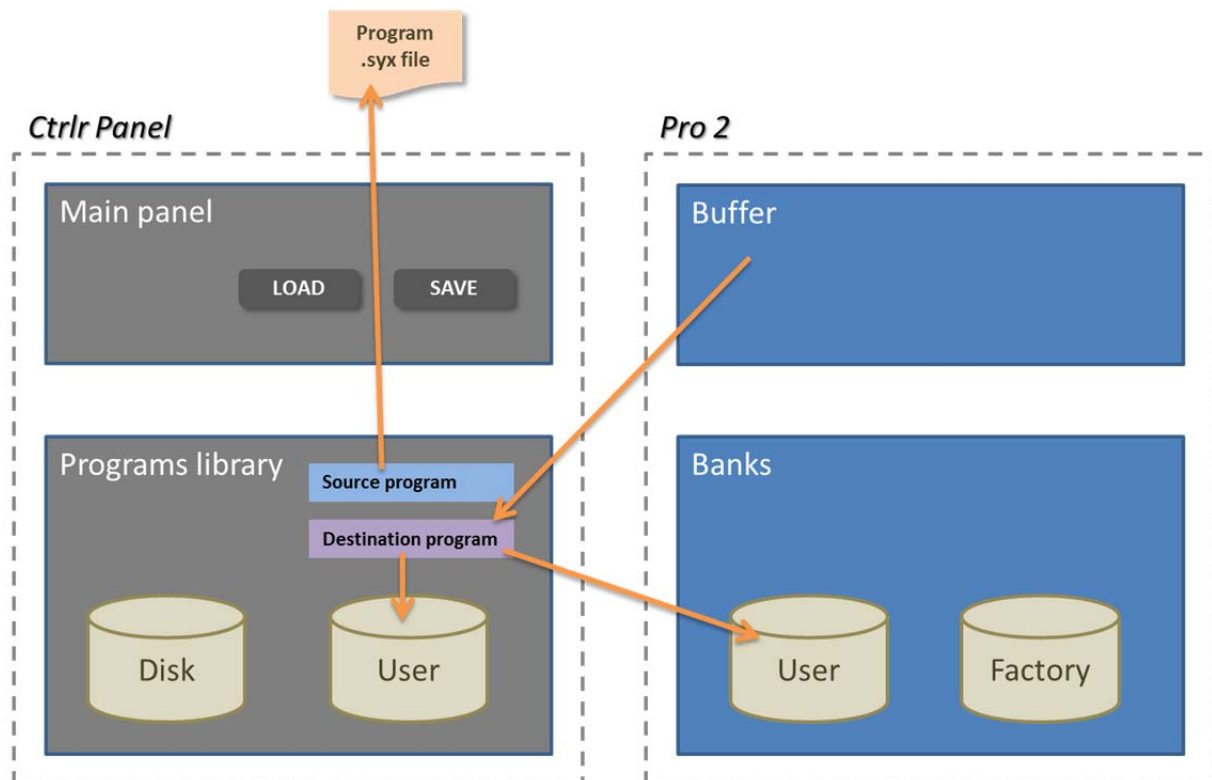
- When loading/changing a program in a bank (Dx or Ux), the corresponding bank file is also updated on the computer (when BankAutoSave is On).
- When loading/changing a program in a User bank, the program is also saved in the corresponding Pro 2 User bank

Look at next page for a graphical description of those possibilities.

Usage: select a source and/or a destination program; select an action from the drop-down menu then click on the Proceed button.

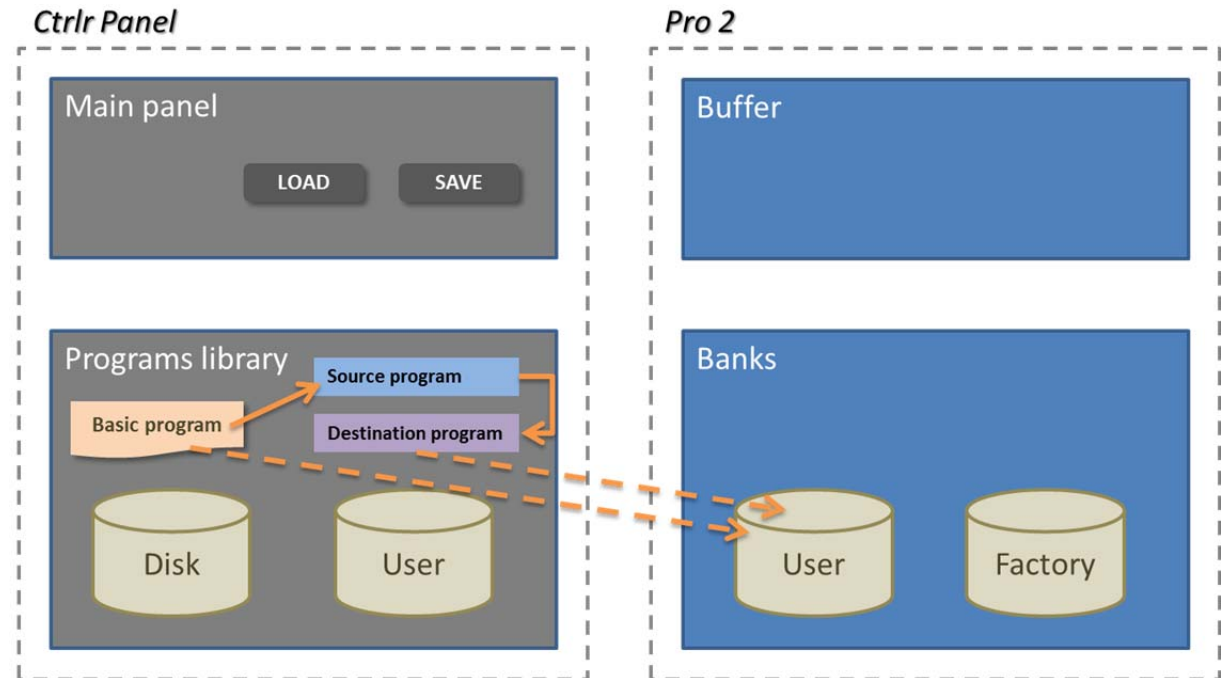
Load program actions:



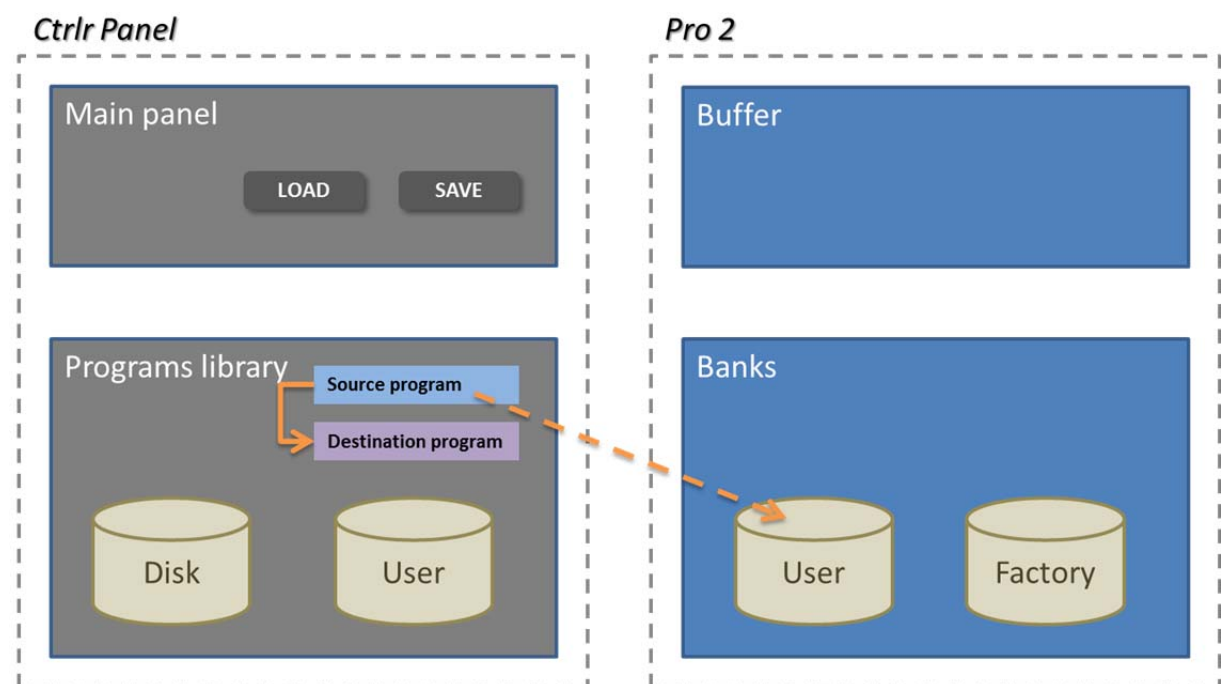
**Save program actions:**

Move program:

Move a program from Source to Destination. The Source program is replaced by a Basic program. If the Source program is in Ux, it is changed on the Pro 2; if the Destination program is in Ux, it is changed on the Pro 2.

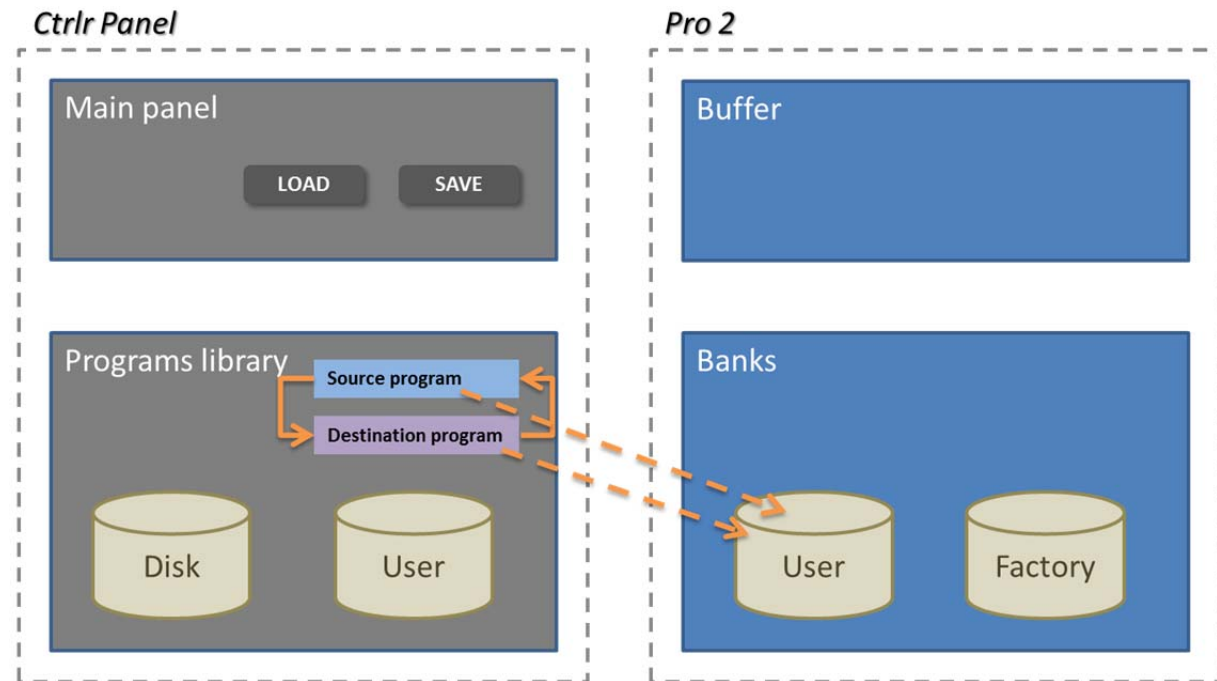
**Copy program:**

Copy a program from Source to Destination. If the Destination program is in Ux, it is changed on the Pro 2.



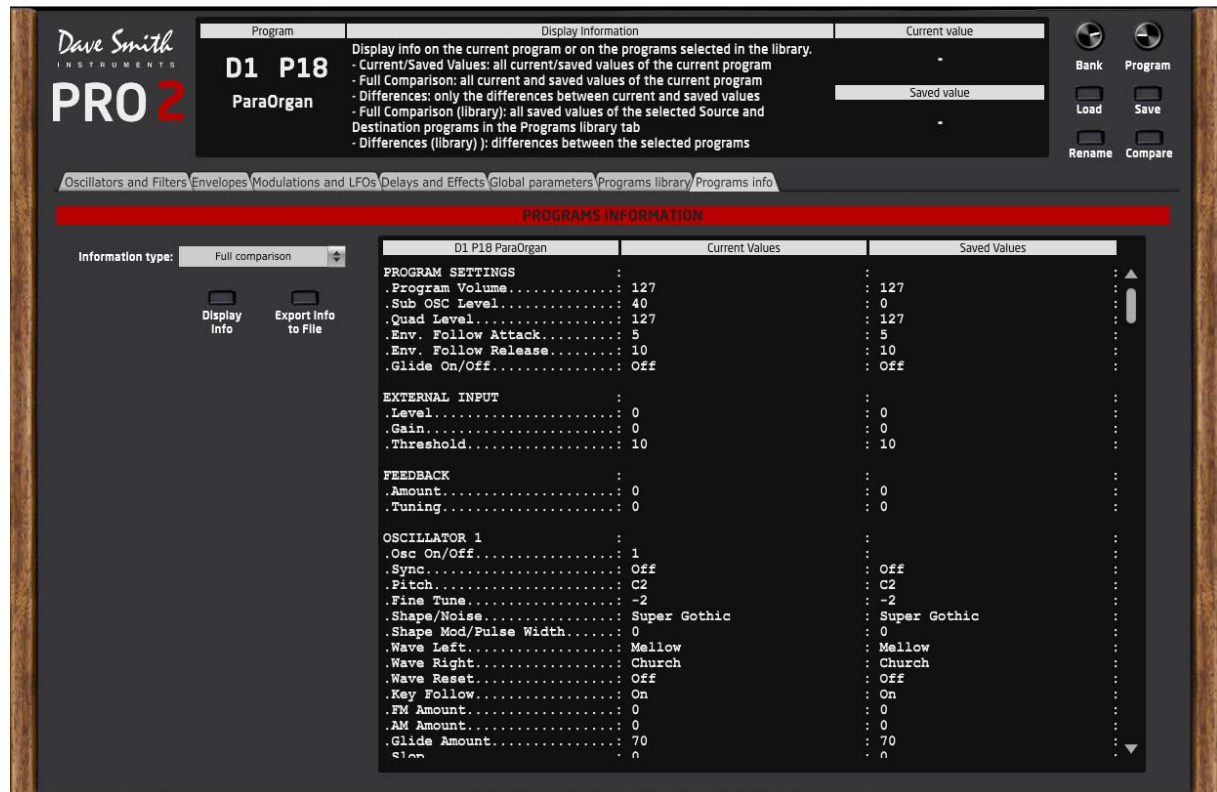
Swap programs:

Swap Source and Destination programs. If the Source program is in Ux, it is changed on the Pro 2; if the Destination program is in Ux, it is changed on the Pro 2.



Programs info

The **Programs info** tab allows you to list/export information about the current program (saved and current values) and to list/export information about the source and destination programs selected in the Programs library tab.



The following programs info operations are available:

- Current Values: list all current values of the current program
- Saved Values: list all saved values of the current program
- Full Comparison: list all current and saved values of the current program
- Differences: list only the differences between current and saved values of the current program
- Full Comparison (library): list all saved values of the source and destination programs selected in the Programs library tab
- Differences (library)): list only the differences between the source and destination programs selected in the Programs library tab

The **Display Info** button lists the information according to the selection made in the drop-down menu.

The **Export Info to File** button first lists the information according to the selection made in the drop-down menu then directly presents a popup window allowing saving the listed information to a text file on the computer.

Ctrlr programming notes

Pro2 bugs and enhancements

Working at detailed level on the way of working of a synthesizer and on its Midi implementation has been leading to the identification of bugs and the proposal of different enhancements.

Identified and recognized bugs by DSI:

- Several corrections to the manual
- The Pro 2 is not responding to the Universal Device Inquiry sysex command, as stated in the manual - F0 7E 7F 06 01 F7. This has been tested with both 1.1.0 and 1.2.0.2 and added to the list of bugs to be corrected.
- The Filter cutoff and resonance (for Filter 1 and Filter 2) are not continuously updated on screen on Midi input. The value is well changed though (you can see this by switching Filter Enable or Osc Split on/off for example). This has been confirmed and added to the list of bugs to be corrected.
- Requesting by Midi the same Factory program as in edit buffer doesn't replace the edited program. So, when you send a program change command that equals the currently selected program, the saved parameter data for that program is not being loaded into the edit buffer. Received program change commands should load the saved parameter data into the edit buffer regardless of the currently selected program. Therefore this has been added to the Pro 2 bug list.
- The Midi Arp Notes and Midi Program Send global parameters are not in the Global Parameters dump and this is in the Pro 2 bug list.

Proposed enhancements to DSI (but all of them politely not accepted):

- When the Pro 2 receives a Program Buffer data dump, the Program number and Bank numbers are not updated. This is logic as buffer data does not have any number but then it gives the wrong indication. The proposal would be to indicate it as for example U- P0 or U0 P0. Seeing this, the user would know he has to save its data in order not to lose the dump. **To be honest, I think that this is really needed!**
- When tweaking a parameter in an editor and sending the corresponding NRPN message to the Pro 2 Midi In, you don't see anything on the screen unless you are already on the correct page. So, basically you don't know if the synth is receiving data and you can't see the actual value on the synth (I agree though you can hear the change and see the value changing on the editor). Proposal is to automatically switch the OLED to the parameter's page so you can get visual feedback when NRPN data is received in Midi In. Obviously, an additional global parameter would be needed to toggle that behavior on/off in the case that people do a lot of automation switching rapidly between parameters from the DAW.
- Envelope Attack, Decay and Releases are Mod Destinations but not Delay and Sustain. This is by design...

If you think that some of those enhancements are valuable, please submit a request to DSI support and post a topic on DSI forum!

Ctrlr Pro2 panel programming notes

For the ones interested in building Ctrlr panels, here are some info and notes about the way the panel has been built

TO BE COMPLETED

Appendix

Version history

Date	Version	Description	By
2016-08-29	0.1	Initial document provided for beta testers	goodweather
2017-03-20	1.0	Initial official release. Added Rename and Compare explanations. Added Programs info tab explanations	goodweather

DSI Pro 2 information

The Pro 2 product page: <https://www.davesmithinstruments.com/product/pro-2/>

A set of videos I gathered regarding the Pro 2 and the Prophet 12:

https://www.youtube.com/playlist?list=PLWOUQX-PsCxcZWNL_ijVqg1USohHIZ_b

The Pro 2 forum: <http://forum.davesmithinstruments.com/index.php?board=6.0>

When you have issues...

The best is just to close the panel, Ctrlr then your Pro 2. Then, switch your Pro 2 On, start Ctrlr and load the panel.

Check your Midi channel or other Global parameters that may have been changed and are preventing the transmission.