



Behringer K2 Ctrlr panel documentation and instructions

V1.0- 2019-12-08



Introduction

Hi! Thanks for having purchased this Behringer K2 panel!

As you know, the Behringer K2 don't have presets but it is always nice to keep a track of the settings used for a nice sound and it is even nicer to have a track on the ways of using a particular sound.

Therefore, you will have the possibility to map your settings and also allow you to automatically listen to a wav file associated to your patches.

However the panel is a pure patch mapper as the Behringer K2 does not support the load/save of programs or the manipulation of its program parameters by Midi NRPN/CC/Sysex messages.

It will support you in saving and retrieving Behringer K2 patches on your PC but gives you also the possibility to exchange them with other users as they are stored as sysex files.

The look and feel philosophy has been respected as much as possible.

Of course it would also be stupid to not benefit of the computer possibilities. Therefore, you also get a display of the current parameters value, a graphic display of the envelopes, the ability to store and indicate the input/output patches, etc...

Despite careful testing it is possible that some bugs remain. Please contact sunny.synths@gmail.com if you find one so they can be corrected as soon as possible.

In the same spirit, contact sunny.synths@gmail.com as well if you would like some enhancement on the panel.

By that, please have a look on this manual to have an idea of the way of using it and its features. Enjoy making music with your Behringer K2 and have fun!

Sunny Synths

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Installation and features

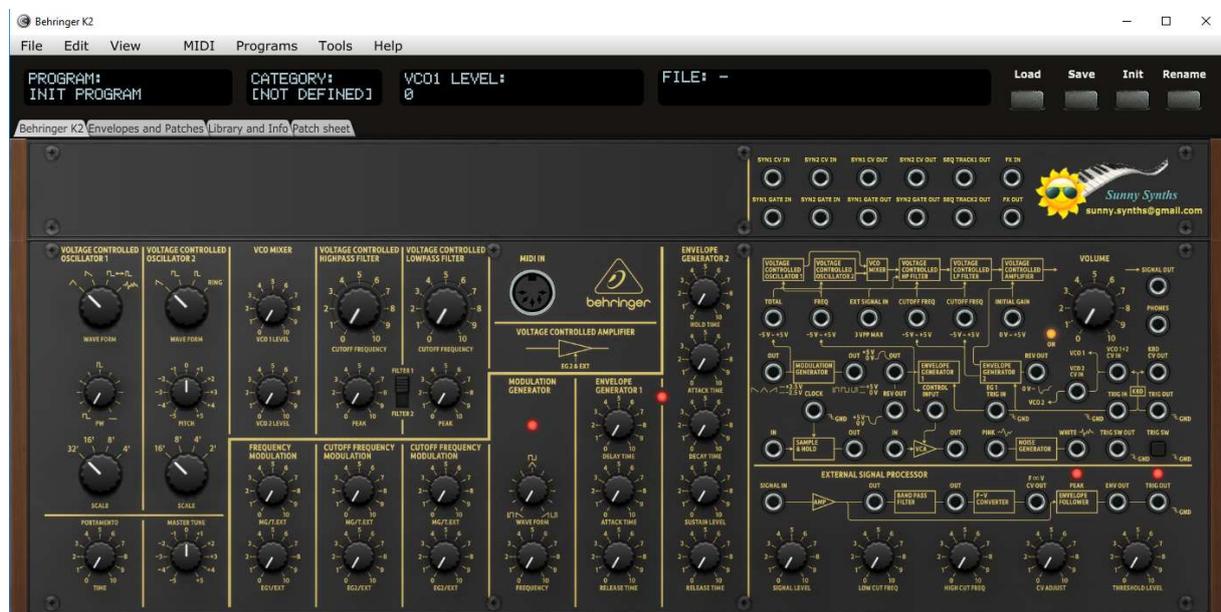
Installation of the Ctrlr panel

The panel is provided as a compressed .zip file containing:

- the Behringer K2 panel as an .exe file on Windows PC
- the Behringer K2 panel as an .app file on Mac OS (zip folder to be uncompressed)
- this manual as PDF
- a folder containing some presets and wav files found on internet

Decompress the zip file anywhere on your PC then launch the **Behringer K2 v10** program. The file may be scanned by your antivirus program (Avast on my computer) and should return no issue. If any, they are false and probably due to the fact that the program is not officially referenced.

The program will directly display the Ctrlr window with the Behringer K2 panel displaying its main tab.



The panel will most probably not be responding after the initial installation. Simply close the program and restart it to solve the issue.

Features

You will find the following features in the Behringer K2 panel:

- Behringer K2 interface with similar way of working as actual synthesizer.
- Top row of support “screens” with old look
- Visual feedback by using “LED” ring buttons and indication of the value (on change or on click)
- Envelopes graphs handled by mouse or buttons
- Load / Save programs from individual .syx files
- Easy program renaming
- Display and export of program parameters as text file
- Ability to describe 9 input/output colored patch cables with different sources/destinations
- Extra input/output patch points from/to external synths, sequencer and FX chain

- Programs have a name, author, save date and description. They can be associated to a category
- Browser of the files on the disk
- Patch sheet tab with patch sheet for Behringer K2 and other gear (external synths/sequencer/FX)
- Automatic reading of wav files associated to a patch
- Manual/Automatic reading of any wav file

Way of working

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

Using the buttons and modifying parameters

You modify parameters using rotary encoders by clicking on the button then moving the mouse cursor vertically up or down.



You can also modify any rotary encoder based parameter by hovering the mouse on the button then using the mouse scroll wheel.

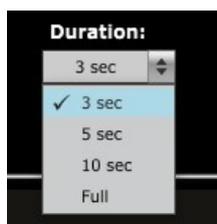
The switch is handled by clicking on it. It will take successive positions as the actual switch.



Momentary push buttons are activated by simply clicking on them (what a surprise...). They will momentary flash.



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



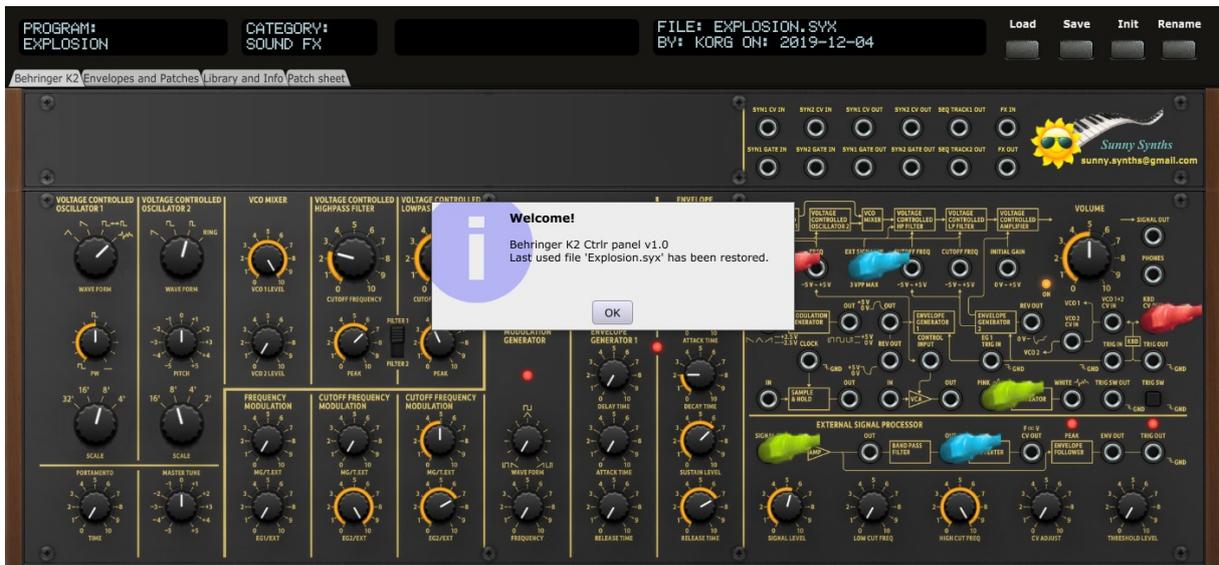
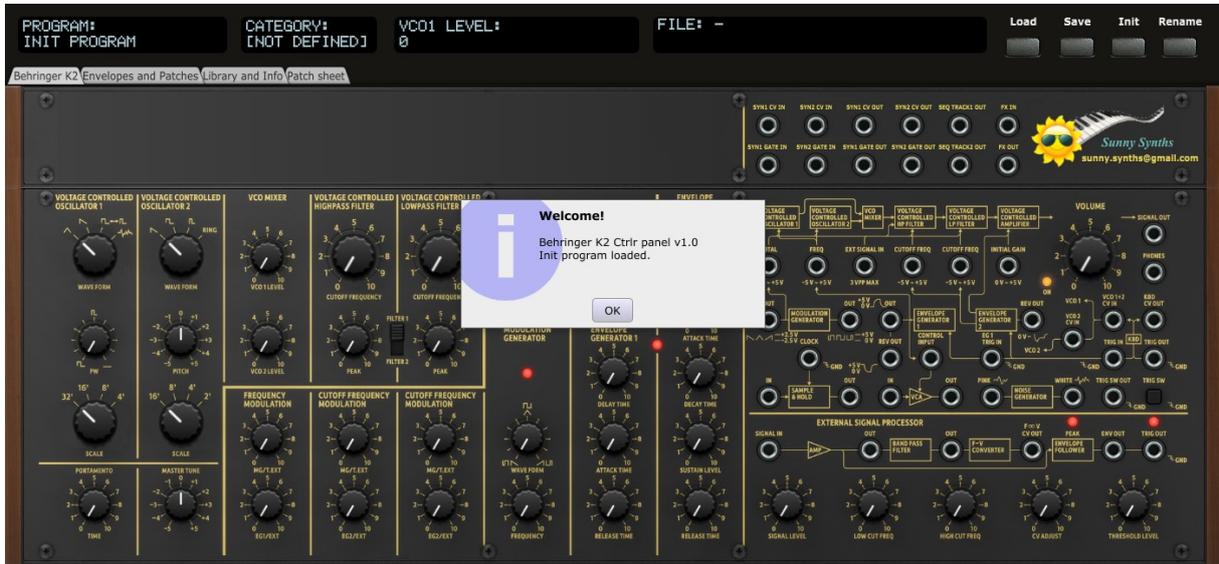
Quick reset to default value

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

Opening and closing the panel

When closing the panel (either by using **File – Quit** or by clicking on the upper right red cross) the file of the last program loaded or saved is stored.

When opening the panel, it is checked if the last file used still exists (could have been renamed or moved or deleted). If not found, the Init program is loaded (in the same way as when loading the panel for the first time. If found, it is restored so you can continue your work where you left it.



The same is done with the root folder of the File browser (see [Library and Info tab](#) on p20).

Top panel area



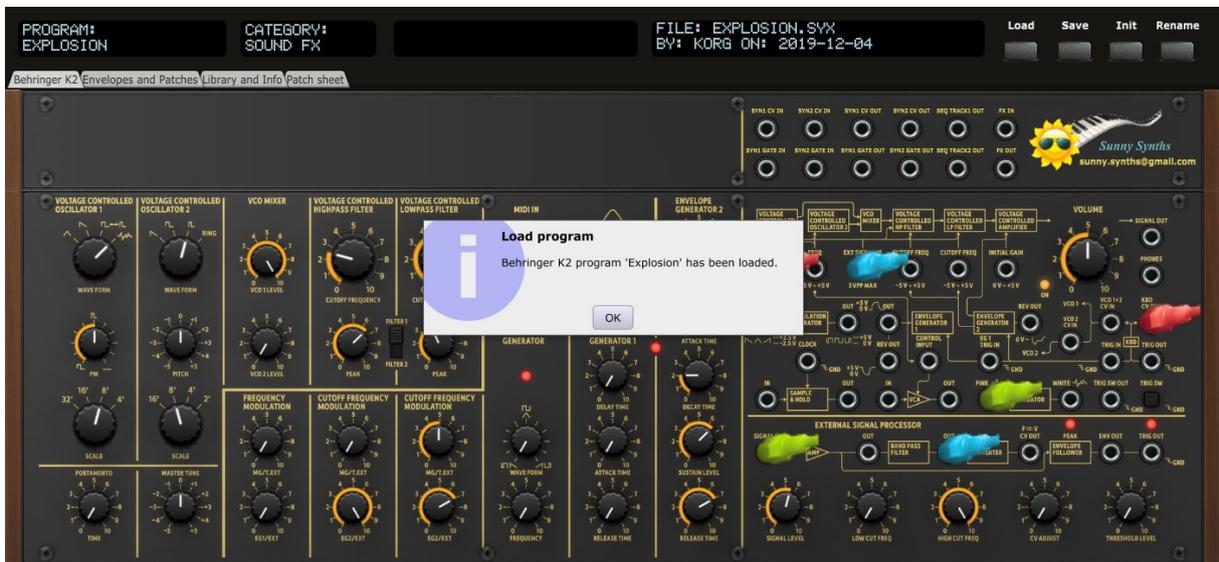
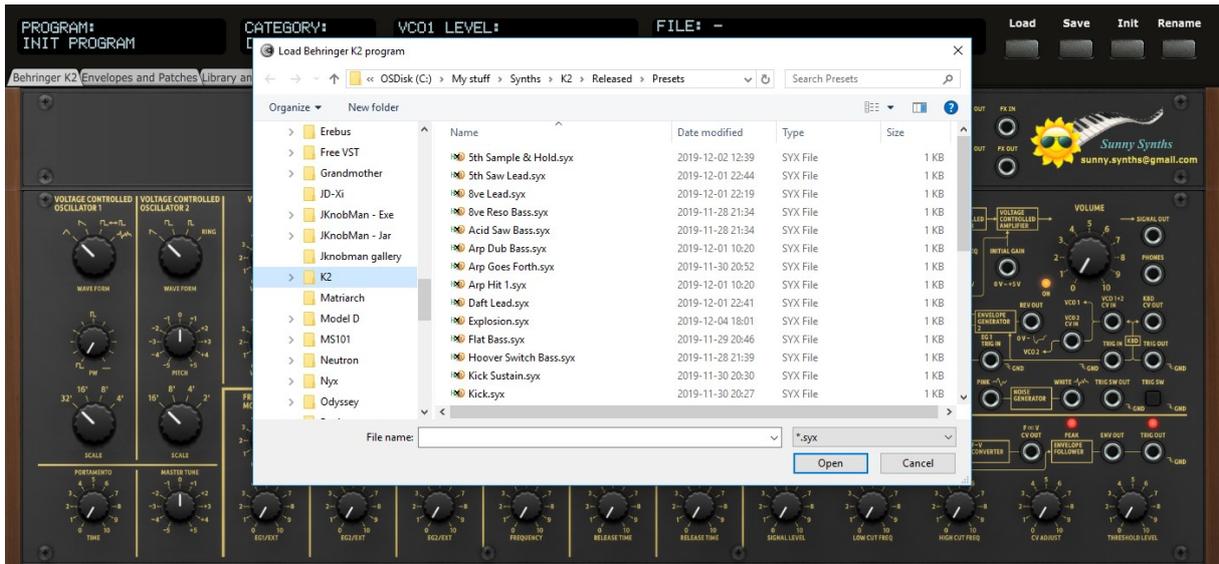
In the top panel area you find 4 feedback “screens”, 4 buttons and 4 tabs:

- The first screen displays the **name** of the current program
- The second screen displays the **category** of the current program
- The third one indicates the parameter currently modified and its value
- The fourth one displays the latest sysex file loaded, its author and the save date
- The **Load** button allows loading a sysex file from disk
- The **Save** button saves the current program to a sysex file on disk
- The **Init** button reset all parameters to *a Basic program*
- The **Rename** button allows renaming the current program
- The **Behringer K2** tab displays the synth main panel including an extension for 12 patch points related to external synths, a sequencer and an FX chain
- The **Envelopes and Patches** tab displays the envelopes as graphs, allows the registration of 9 different input/output patches, the identification of two external synths, one FX chain and allows modifying the Category, the Author and the Description of the current program.
- The **Library and Info** tab provides the file browser that allows the selection of sysex files or the ability to listen to wav files, the display and the export of the parameters of the current program as text file and gives About info of the panel. It is also here that you will find the manual panel zoom that is memorized.
- The **Patch sheet** tab displays automatically the Behringer K2 patch sheet with all parameter values (as in the manual) but with the addition of author, date, external synths and FX chain names and 12 external input/output connections

Loading a Behringer K2 program

The panel loads and saves the program parameters as a 420 bytes sysex file (.syx) from/to your computer.

Clicking the **Load** button opens a classical Open file dialog where you can select the file to load. An internal check is done to verify that the file is compatible with the Behringer K2 panel. The parameters are loaded, the top screen is showing the name of the file, the author and the saved date and a confirmation dialog is shown.



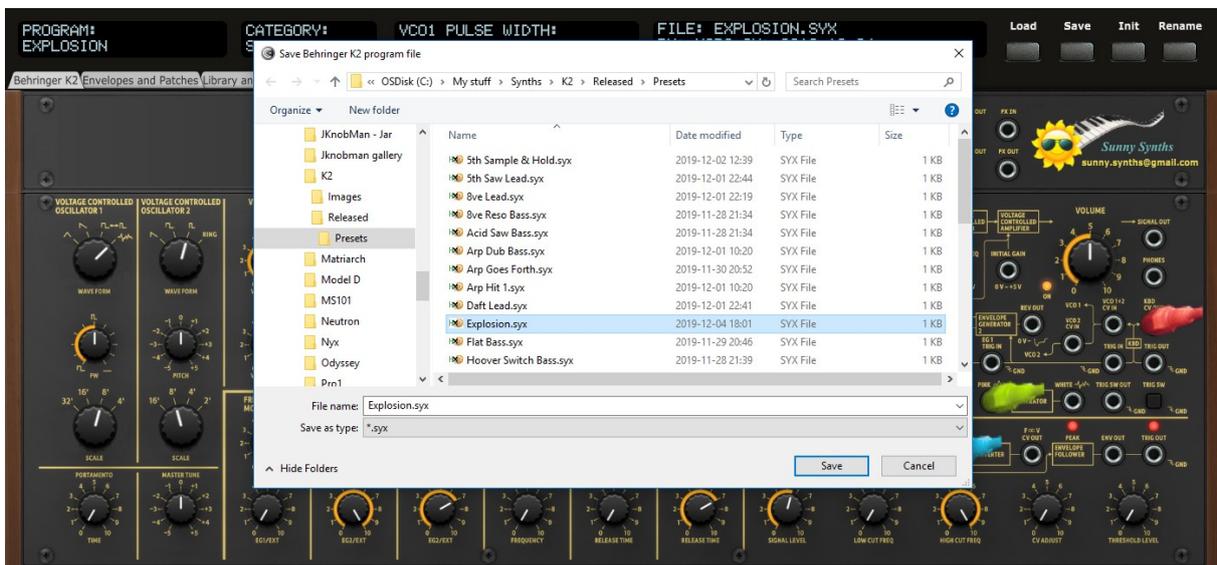
Saving a Behringer K2 program

The panel loads and saves the program parameters as a 420 bytes sysex file (.syx) from/to your computer.

Clicking the **Save** button opens a classical Save file dialog where you can enter the name of the file to save. At this stage it is needed to select an existing file if you want to overwrite it. In that case, you will get a confirmation message.

Once the parameters are saved, the top of the screen displays the name of the file, the author (as set in the *Envelopes and Patches* tab) and the saved date (thus, the current date) in ISO format *yyyy-mm-dd*. A confirmation dialog is also shown.

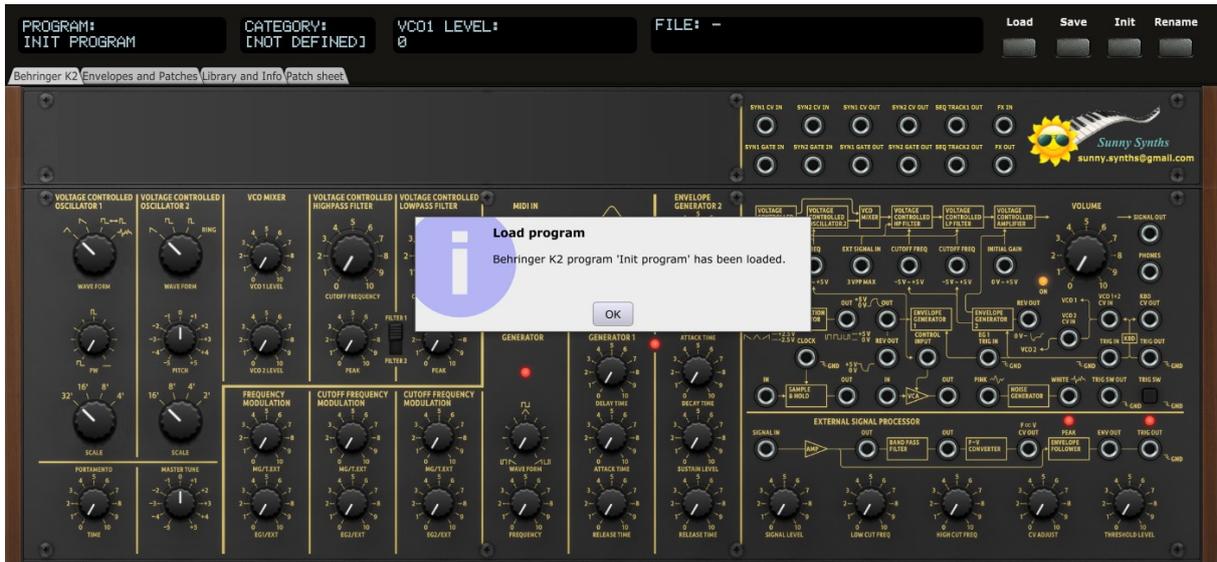
The panel stays on the current tab after a Save is done.



Program Init

Clicking the **Init** button loads the parameters for a Basic program that has the following characteristics:

- All parameters at 0 or OFF



Program Rename

Clicking the **Rename** button opens a popup window where you can modify the name of the program. The name should be maximum 20 characters long (will be truncated if longer).



Please note that the program name can (of course) be different than the file name the program is saved in.

Behringer K2 tab

In the **Behringer K2** tab, you have access to the same parameters as on the actual synthesizer.

Please refer to the Behringer K2 user manual

https://media63.music-group.com/media/PLM/data/docs/P0DN7/K-2_P0DN7_QSG_WW.pdf

for the explanations of each encoder/button.



The third top screen is showing the name and the value of the parameter you are modifying.

Doing a single click on any rotary encoder is displaying its name and current value **without that you need to modify it**.

Clicking on a slider position is directly moving the slider to that position.

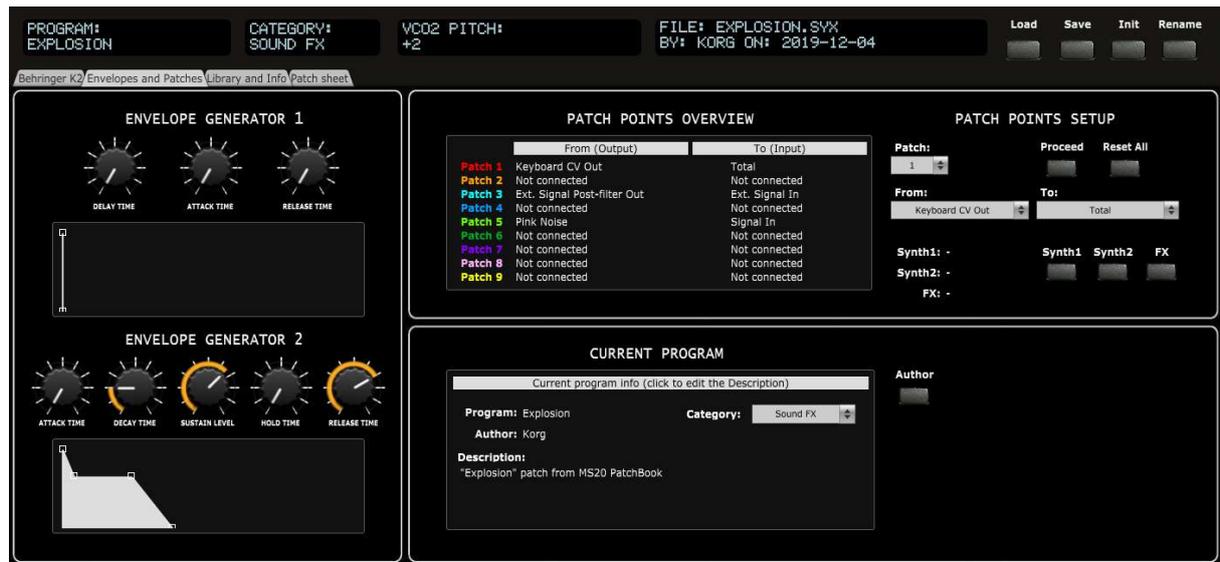
Modifying the Delay, Attack, Decay, Sustain, Hold, Release encoders of the envelopes is setting identical encoders/buttons in the Envelopes and Patches tab and adapting the corresponding envelope graph accordingly.

Above the actual panel corresponding to the actual K2 synthesizer you will find 12 additional input/output patch points (CV/Gate for 2 synthesizers, 2 sequencer tracks and one FX chain). This is allowing you to also indicate when some external gear is also part of a certain patch.

Envelopes and Patches tab

In the **Envelopes and Patches** tab, you can:

- adjust the envelopes either with encoders or by moving the anchors of the graphs
- set/indicate up to 9 from/to patches
- adapt the name of the external synths that could be connected to your K2
- adapt the name of the FX chain that could be connected to your K2
- adapt the current program category, author and description (click on the current description to edit it)



Envelope shapes

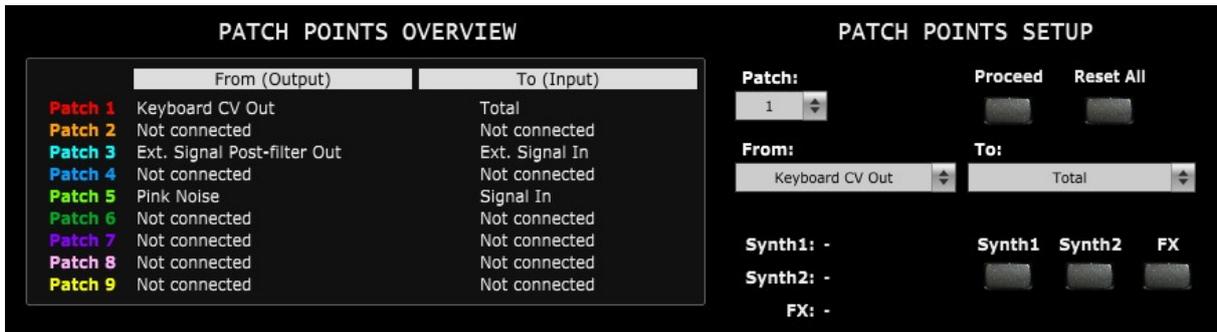
You can modify the envelope shape by either moving the Delay (Env1 only), Attack, Decay, Sustain, Hold (Env2 only), Release encoders or by using the mouse and moving the anchors on the graphs either vertically or horizontally.



When moving the anchors, the corresponding Delay (Env1 only), Attack, Decay, Sustain, Hold (Env2 only), Release encoders will also move and the parameter name and value will be displayed in the screen of the top panel area.

Patch points

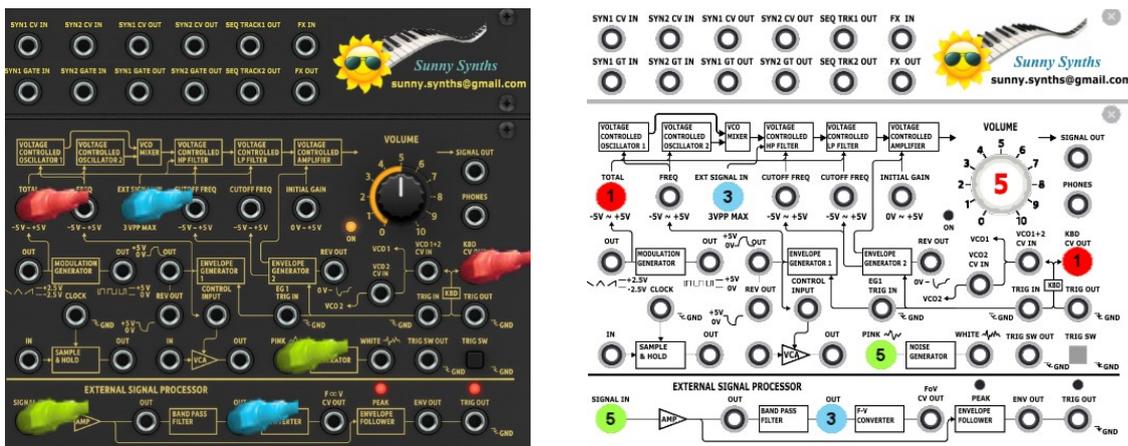
You modify the from/to patches as follows:



Clicking anywhere on a patch line (label, input, output, blank space) will select the patch to be modified and display its values in the pull-downs. You modify the “From” source and/or “To” destination and press the Proceed button to make the change.

You can also directly select a patch in the Patch pull-down then modify the From/To and press Proceed.

Patches are numbered 1 to 9 and have a color assigned to them. When a from/to patch is set in the **Envelopes and Patches** tab, corresponding patch cables are displayed on the main Behringer K2 tab and corresponding colored numbered circles are displayed on the patch sheet.



Numbered circles are used to help colorblind people.

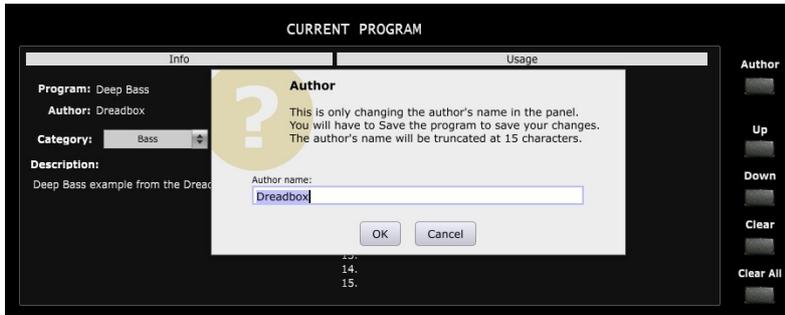
Available “From” sources are the output patch points of the synthesizer plus a few additional external ones: "Not connected", "Signal Out", "Phones", "Mod Generator Out 1", "Mod Generator Out 2", "EG1 Out", "EG1 Reverse Out", "EG2 Reverse Out", "Keyboard CV Out", "Trigger Out", "S&H Out", "VCA Out", "Pink Noise", "White Noise", "Trigger Switch Out", "Ext. Signal PreF Out", "Ext. Signal PostF Out", "Freq-Volt CV Out", "Ext. Signal Env Out", "Ext. Signal Trigger Out", "Synth1 CV output", "Synth2 CV output", "Synth1 Gate output", "Synth2 Gate output", "Sequencer track 1", "Sequencer track 2", "FX output"

Available “To” destinations are the input patch points of the synthesizer plus a few additional external ones: "Not connected", "Total", "VCO1+VCO2 Frequency", "Ext. Signal In", "HPF Cutoff Frequency", "LPF Cutoff Frequency", "Initial Gain", "EG1 Trigger In", "VCO2 CV In", "VCO1+VCO2 CV

In", "Trigger In", "S&H In", "Clock In", "VCA In", "VCA Control input", "Signal In", "Synth1 CV input", "Synth2 CV input", "Synth1 Gate input", "Synth2 Gate input", "FX input"

Current Program

Clicking the **Author** button opens a popup window where you can modify the name of the author of the patch. The name should be maximum 15 characters long (will be truncated if longer). If you leave the Author name empty then a "?" is displayed.



Clicking the **Synth1** button opens a popup window where you can modify the name of a synth connected to your K2. The name should be maximum 11 characters long (will be truncated if longer). If you leave the Synth1 name empty then a "-" is displayed.

Clicking the **Synth2** button opens a popup window where you can modify the name of a second synth connected to your K2. The name should be maximum 11 characters long (will be truncated if longer). If you leave the Synth2 name empty then a "-" is displayed.

Clicking the **FX** button opens a popup window where you can modify the name of a FX chain connected to your K2. The name should be maximum 15 characters long (will be truncated if longer). If you leave the FX name empty then a "-" is displayed.

Library and Info tab

In the **Library and Info** tab, you have access to:

- a file browser that gives you directly information about the clicked file without having to load it
- the settings when playing a wav file
- an About screen giving you information about the panel version and the history of changes
- the Panel zoom buttons keeping the zoom factor in memory till next usage of the panel
- the display of all program parameters as a text file with the possibility to export it



File browser

The **File browser** allows you to navigate on your disk and browse through presets and wav files. It works as follows:

- **Click** on any file to display some info (name, category, author, saved date, description) about it in the Quick info window. If you click on a non-K2 or .wav file then it will be indicated. When Auto Play is activated, clicking on a .wav file will play it automatically for the chosen duration and clicking on a K2 .syx file will make the corresponding .wav file play automatically as well (if a wav file with the same name as the K2 .syx file is found)
- **Double-click** on a file to load it (K2 .syx file) or play it (.wav file) directly. A popup will be displayed if you do this on a not recognized file type
- Use the **Set Root** button to select the folder where your presets are (at this stage, the patch saver doesn't remember the location after you quit it). Note that you must at least have one file in the selected directory in order to have **Set Root** functioning.



Sometimes the Set Root doesn't work (displays nothing or stays on the currently selected root directory). I have still not found the reason (thought it was due to no file being present in the folder; only subfolders but seems not to be always the case).

Temporary workaround: just select one level higher. Sorry...

- Use the **Refresh** button to refresh the list after having saved several files or added files outside the patch save
- Use the **Load** button to load the selected file and display its parameters
- Use the **Play** button to manually start playing a .wav file

Wav file play settings

Wav files will be played for the duration set in the **Duration** pulldown (3s, 5s, 10s or Full).

Activating **Auto Play** will automatically trigger the play of the .wav files OR trigger playing the .wav file corresponding to the clicked K2 .syx file (if found). If there is no corresponding .wav file then nothing happens.

Panel zoom

The panel can be zoomed by using the Ctrl + or Ctrl – keys combinations. This is also available from the **View** menu.

Using that method is incrementing/decrementing the zoom factor by 10% steps but the main issue (for some users) is that the zoom factor is not memorized and thus at next usage the zoom is back at 100%.

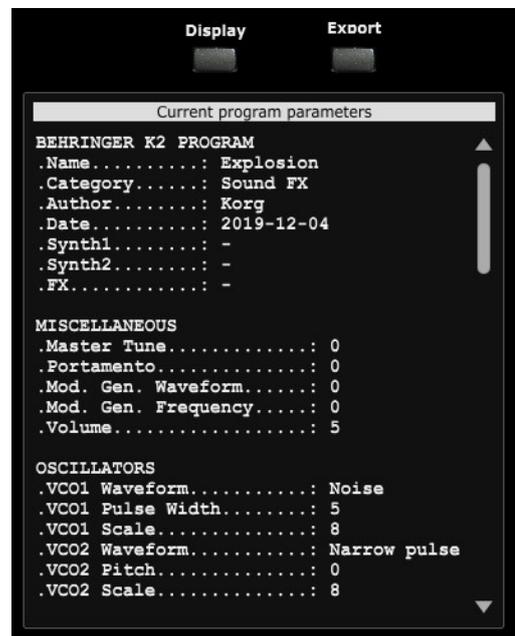
This is the reason of the implementation of this “manual” zoom. Modifying the zoom factor using those buttons is changing the zoom by 5% steps and will make it keep the zoom factor for next usage.

If you are still modifying the zoom using the View menu or the Ctrl + / Ctrl – keys, no worries! The “manual” zoom is reading the current zoom factor on the panel each time one of the main top panel button is used (Load, Save, Init, Rename).

Display and Export info

On the right side of the panel, you have access to Program parameters:

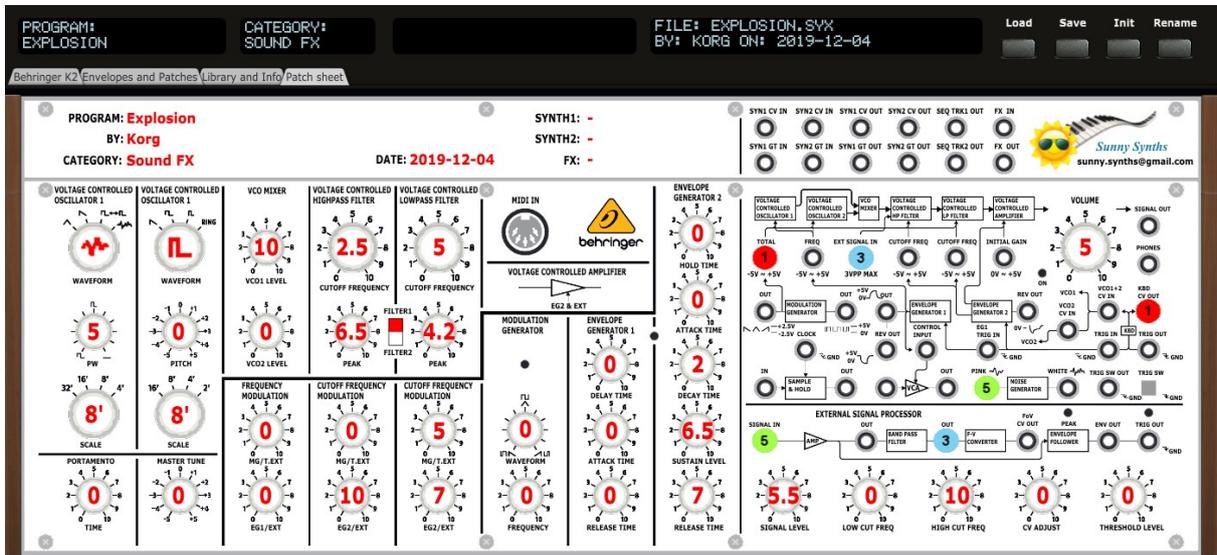
- Use the **Display** button to list the parameters of the current program
- Use the **Export** button to export as a .txt file the parameters of the current program (it is not needed to first display them before exporting)



Patch sheet tab

In the **Patch sheet** tab, you have access to:

- A one shot view of the values of all parameters, patch cable connections and program info



The content of this tab is adapted automatically. Directly ready for a screenshot!

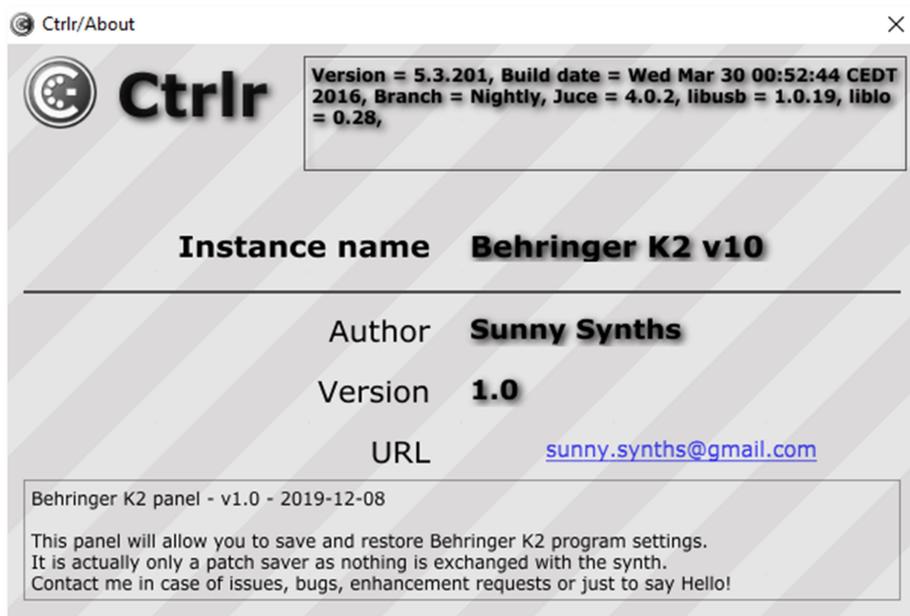
The main Ctrlr menus



Actually, not so much is used from the Ctrlr menus...

What you can use is:

- **File** menu: Quit is the only option
- **View** menu: allows zooming the panel in and out by 10% steps
- **Midi** menu: not used as the K2 is not transmitting CC, NRPN or Sysex
- **Tools** menu: not used as the K2 is not transmitting CC, NRPN or Sysex
- **Help** menu: displays the About info of the panel



Appendix

Version history

Date	Version	Description	By
2019-12-08	1.0	First version of this manual	Sunny Synths

Behringer K2 information

The Behringer K2 product page:

<https://www.behringer.com/Categories/Behringer/Keyboards/Synthesizers-and-Samplers/K-2/p/PODN7>

Sysex file documentation

Here is the documentation of the sysex file used to store the parameters. It is 420 bytes long.

```
-- // Behringer K2 - Sound data sysex structure - Size=420 bytes v1.0 //
--
-- Offset is what is displayed with HxD Hexadecimal analyser
-- getByte() is also using the Offset to retrieve Bytes from sysex dump
--
-- This is just a structure used to save the data on the computer
-- Nothing official or unofficial from Behringer, just a decision made by me ;-)
-- This data is not transferred by Midi
--
-- 100 = 64
-- 140 = 4C
--
-- Offset      | Byte content
-- -----+-----
-- 0000        | F0          Sysex start
-- 0001-3      | 00 20 32   Behringer ID
-- 0004        | 0A         K2 (my choice)
-- 0005        | 01         Sound data
-- 0006-07     | 00-03      VCO Waveform
-- 0008        | 00-64      VCO1 PW
-- 0009        | 00-64      VCO2 Pitch (32=0)
-- 0010-11     | 00-03      VCO scale
-- 0012        | 00-64      Portamento
-- 0013        | 00-64      Master Tune (32=0)
-- 0014-15     | 00-64      VCO Level
-- 0016        | 00-64      Freq Mod MG / T. Ext
-- 0017        | 00-64      Freq Mod EG1 / Ext
-- 0018-19     | 00-64      VCF Cutoff Frequency
-- 0020-21     | 00-64      VCF Peak
-- 0022-23     | 00-64      Cutoff Frequency Mod MG / T. Ext
-- 0024-25     | 00-64      Cutoff Frequency Mod EG2 / Ext
-- 0026        | 00-01      Filter1 / Fiter2 switch
-- 0027        | 00-64      MG Waveform
-- 0028        | 00-64      MG Frequency
-- 0029        | 00-64      EG1 Delay Time
-- 0030        | 00-64      EG1 Attack Time
-- 0031        | 00-64      EG1 Release Time
-- 0032        | 00-64      EG1 Hold Time
-- 0033        | 00-64      EG2 Attack Time
-- 0034        | 00-64      EG2 Decay Time
-- 0035        | 00-64      EG2 Sustain Level
```

--	0036		00-64	EG2 Release Time
--	0037		00-64	Volume
--	0038		00-01	Not used
--	0039		00-64	Signal Level
--	0040		00-64	Low Cut Frequency
--	0041		00-64	High Cut Frequency
--	0042		00-64	CV Adjust
--	0043		00-64	Threshold Level
--	0044-49			Not used
--	0050-58		00-0C	Patch source (1-9)
--	0059-67		00-0B	Patch destination (1-9)
--	0068-87			Name (20 characters)
--	0088		00-10	Category
--	0089-344			Description (256 characters)
--	0345-359			Author (15 characters)
--	0360-369			Date (10 characters for ISO date yyyy-mm-dd)
--	0379-389			Synth1 (11 characters)
--	0390-400			Synth2 (11 characters)
--	0401-415			FX (15 characters)
--	0416-418			Not used
--	0419		F7	End of sysex

