TRITON TOOLS

For the Triton Classic & Triton Rack

Version 1.3.4 009 Copyright - Stuart Pryer 5th September 2025.

See also Fractal Sequencer, Roland RD2000 Editor, Korg Triton Controller and Virtual Instruments.

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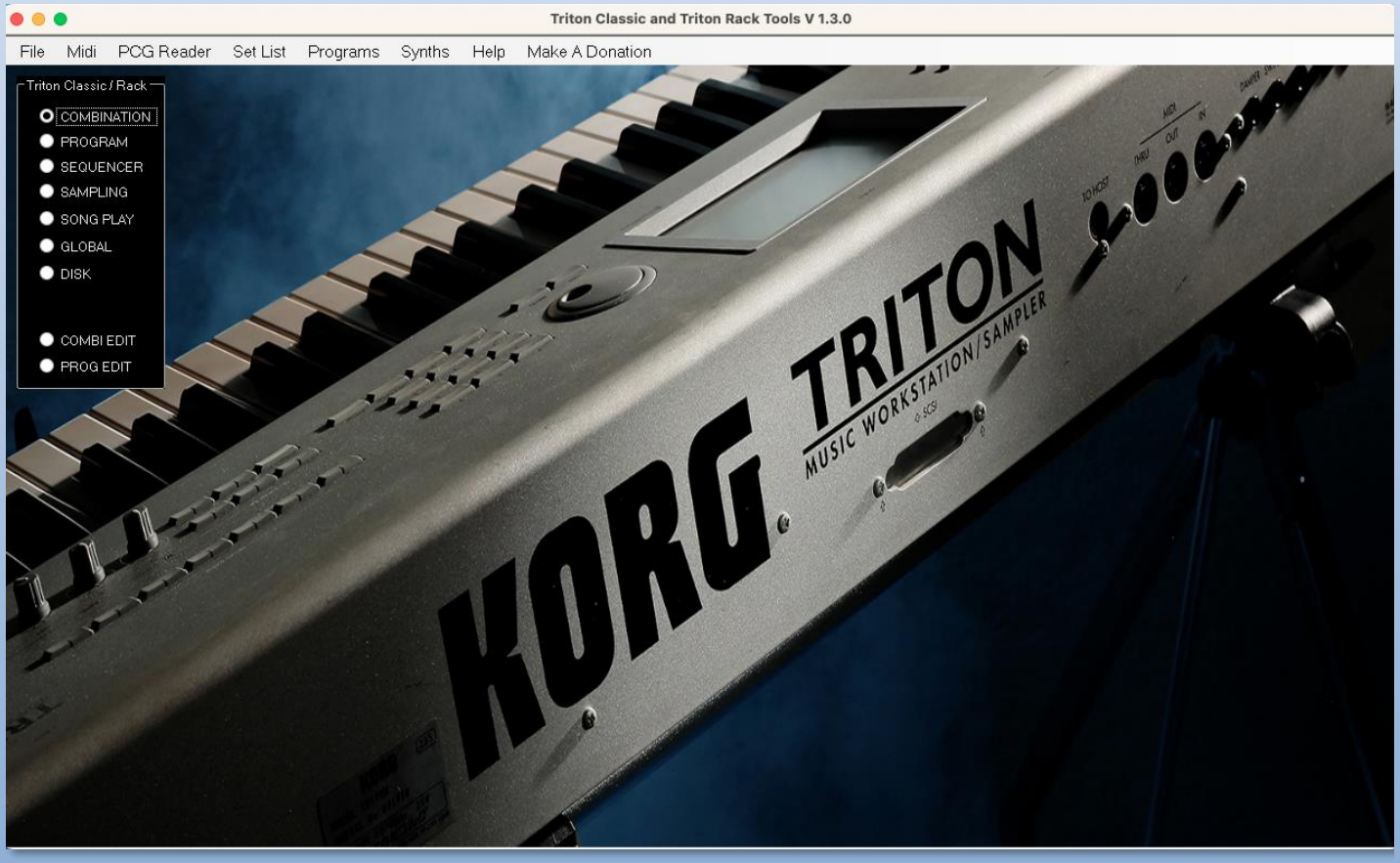
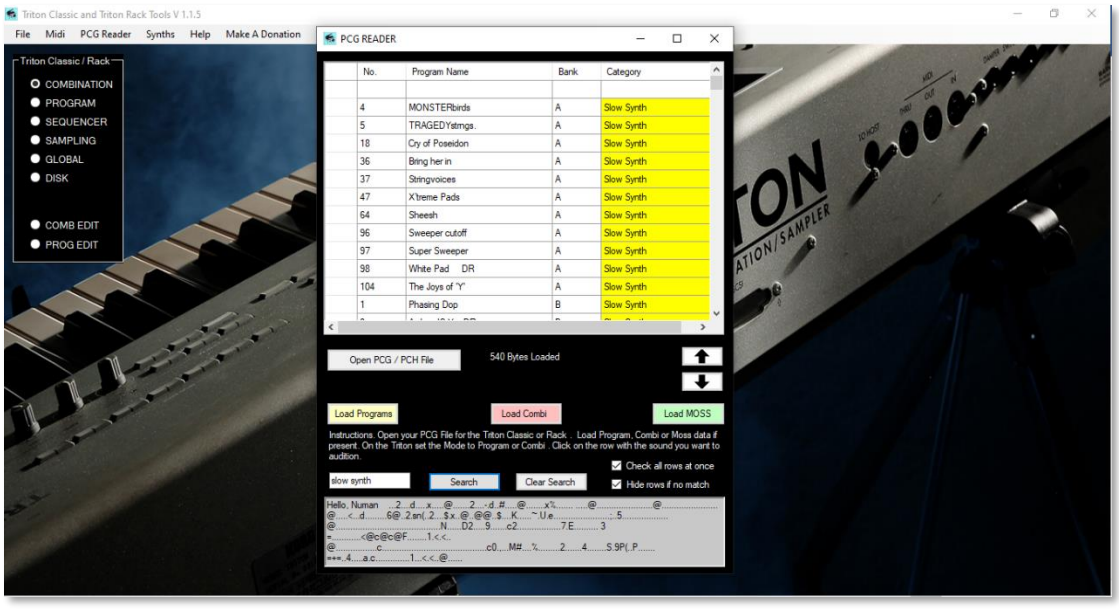


WELCOME

The Korg Triton series workstations are some of the world's best electronic instruments. They combine superb modelling and sampling technology with beautiful build quality and they are also great Midi controllers. Thank you Korg.

This guide covers the Triton Tools software for the Triton Classic and Triton Rack. It enables you to transfer PCG file sounds to the Triton Classic or Rack without a floppy drive. You can also send data from PCH files which are large collections of PCG files created by the Triton Controller software. Two PCH files are in the installation directory containing over 2304 PCM programs and over 1152 Moss programs. Note. My other software 'The Triton Controller' is a full synth editor and Librarian for all Triton Models and is available on my website.

If you want to support this software's development you can use Paypal.com - 'Make A Donation'. Remember to download the latest docs from my website.



Have fun!

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TABLE OF CONTENTS

TRITON SOUNDS OVERVIEW

The basic building blocks of TRITON are sounds. There are built from modelled synthesized sounds (Moss) and samples (Hi sys/pcm see below for Korgs description.

Each PROGRAM contains 2 sounds.

A collection of up to 8 Programs is a COMBINATION

There are 3 main hardware setups I might use with a Triton :-

1. Triton only.
2. Triton with a second weighted Keyboard connected. Tutorial 10
3. Option 2 above and a computer for recording and/or using VSTs'. Tutorials 7. 11 and 12

HI (Hyper Integrated) synthesis system

The HI (Hyper Integrated) synthesis system is a PCM tone generator system with full digital signal processing that guarantees pristine sound, and featuring enormous flexibility in musical extensibility, modulation, and effect routing.

Tone generator section:

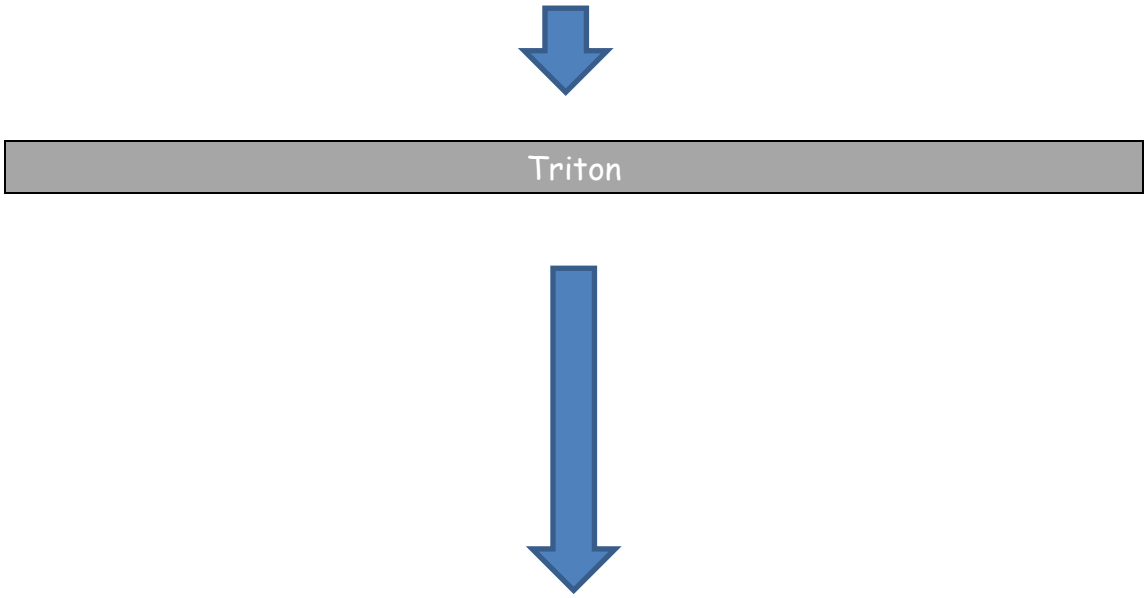
- 32 Mbytes of preset PCM ROM contains 425 multisamples and 413 drumsamples. Separately sold EXB-PCM series PCM expansion boards (16 Mbytes PCM ROM) can be optionally installed to add more PCM data.
- 16 Mbytes of RAM is standard (expandable to a maximum of 64 Mbytes). Samples/multisamples that you sampled or edited in Sampling mode or loaded in Disk mode can be used as sound sources.
- The sampling frequency is 48 kHz, and the maximum polyphony is 62 voices.

Note. The Korg Triton 61 note and Triton Pro 76 note use the incredible Yamaha FS1 keybed with aftertouch. Probably one of the best, non-weighted keybeds ever made! It uses metal, not rubber contacts and has superb touch. It was discontinued when Korg moved to the cheaper Fatar keybeds after the Oasys 76.

MIDI ROUTING

Midi In/Out - Triton

Using Midi din cables.



Midi Out & Thru Triton

Midi Out Din port will always output the Triton data .
Midi Thru will output any midi in data unchanged.

There is a serial port on the Triton Classic in the form of a mouse socket but I don't think the current korg divers work with it anymore. You would also need a serial RS232 to usb converter to connect with the PC. So I suggest you stick with Midi Din cables.

AUDIO ROUTING

Audio Input to the Triton

1. Analog signals sent to the ¼ inch analog input will be routed to the ADC then processed and sent out to audio out.

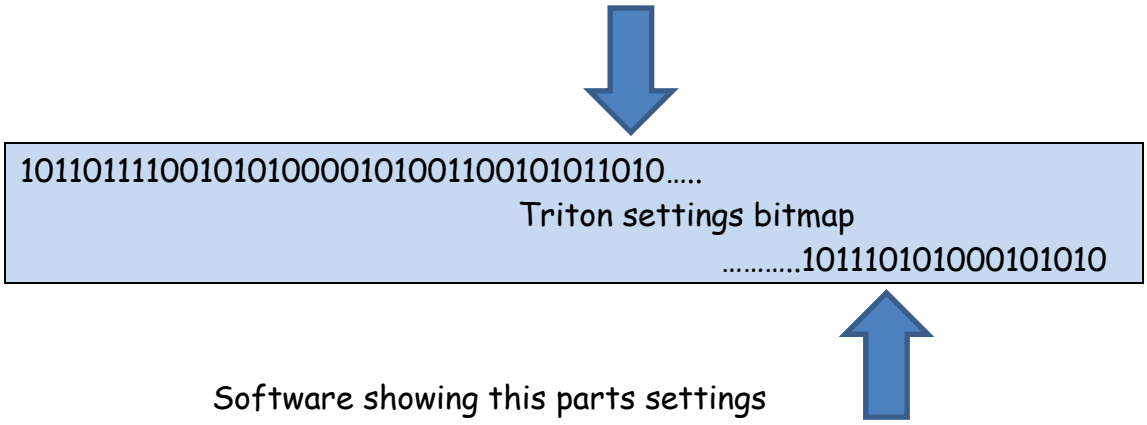
TRITON

Audio Output of the TRITON/KRONOS

1. L/R analog outputs
2. Headphones ¼ inch analog TRS Stereo
3. Sub Outs – analog outputs

EDITING THE TRITONS SETTINGS

When you edit settings using software the Tritons screen may be showing a different page. It does not matter, because both the screen and the software are just viewing different parts of the Temporary Memory settings bitmap. That is what you are editing. You must however be in the correct mode. Eg. Program. Combi etc.



When you finish any editing, you must WRITE the settings on the Triton or it will be lost when you power down.

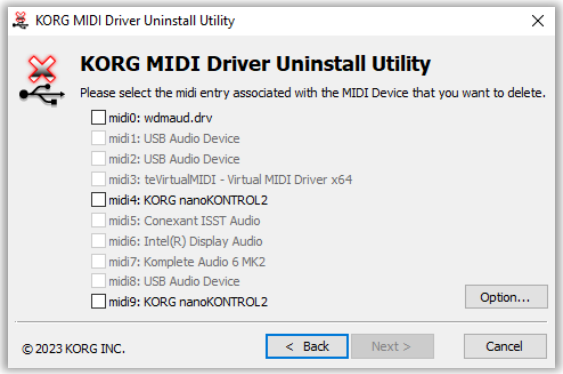
SETTING UP MIDI & AUDIO

The Triton's sound pallet can be expanded limitlessly using a computer loaded with virtual instruments. It is also a midi controller and has an inbuilt midi/audio interface. So how do you set up the synth and a DAW to work together so you can use the Triton sounds and the sounds from a computer mixed together?

1. On the DAW set midi in chnl and midi out chnl to Triton and turn off local control on the synth to 'uncouple' its keyboard from its sound engine. Set audio in/out to Triton or to your audio interface. Select an instrument on the DAW.

2. When you play a note on the Triton, midi out note data is sent on to the DAW which reads it. Produces a digital audio signal which is sent back out to speakers or headphones.

Important. Windows 10 – Loading the Korg Midi Driver if you are using Korg Midi Devices - latest 1.15 r51 e. When you load the Korg Midi Driver it has to occupy the first 10 slots in the Windows 10 Midi Driver List or it won't work. When you install the Korg driver it installs a separate program in installation directory for checking this – see below. If your first 10 slots are full you need to delete an existing USB Midi Driver. Note. Each usb port used on the computer with the Korg driver takes a slot.



KORG NANOPAD 2

The Oasys had 8 touch sensitive pads. They were great as it had pre-programmed chords for each sound associated with the pads. The Triton, Kronos don't have these pads but you can add them. If you buy a Nanopad2 the Kronos will automatically detect it and assign the chords to it. The Nanopad 2 also has an X/Y pad which can be used to control 2 prameters at once or play a scale. You need to route the pad output to the Triton using a DAW or use it to control VSTs'.

TRITON CONTROL SURFACE AND AT

The Triton control surface has far fewer controls that the Oasys and Kronos. However, it can be remedied by using a separate USB control surface. I recommend the Korg NanoKontrol 2. They only output Midi CC or note values but this can be rectified by using this software which can map Midi CC to Sysex as well should you need it. Not many controllers can be set up to output sysex.

I would also recommend getting the Korg DS 1h pedal which is a continuous controller, Korg EXP 2 Expression Pedal and PS 1 footswitch to give you greater control. The latter can be set to increment or decrement the Program, Combination or Set List slot number if in these modes. You can set what it does in Global Mode.

Midi Learn on a DAW is a useful feature. You can leave the CC values as they are and use Midi Learn on the VST/Daw. Then save the project in your DAW to retain the midi learn values. The normal way of doing this for instance in Bitwig is to right click the particular control with the knobs on the Triton set to User Select, then move the controller on the synth. This sets the link between the Triton and the VST graphical controller. Most DAWs/VST's have midi learn. There are default settings for each controller, but most of these can be re assigned to different Midi CC values. Note. You can change Bank and Program on external synths if you enter the Bank MSB/LSB & Program Number of the external synth on the Triton.

USING A KORG NANOKONTROL 2 WITH THE TRITON

Using a separate USB control surface with the Triton such as the NanoKontrol 2 can give you great control of any VST's you use. You can also the controller to control a DAW and the NanoKontrol 2 has templates built into Bitwig and there are control surface plugins for the other main DAWS.

Example. Using midi mapping with the Triton. Use the NanoKontrol editing software to set up the Midi CC values for each controller as suggested below, using free CC values. Write and Save the Scene data on the NanoKontrol. Note CC values 14 to 31 and 102 to 117 are undefined in the Midi Spec and are unused by the Triton. If you want to use the Nanokontrol for drawbar function use this software to map to sysex. A Mapping template is in the installation directory for the 'out of the box' setup for Nanokontrol 2.

Example. Suggested NanoKontrol Controller Assignments for Nautilus

NanoKontrol Assignments	Set CC Values on Nanokontrol
Slider 1	CC 24
Slider 2	CC 25
Slider 3	CC 26
Slider 4	CC 27
Slider 5	CC 28
Slider 6	CC 29
Slider 7	CC 30 for Sysex to drawbar 7
Slider 8	CC 1 for Modulation Or CC 102 for Sysex to drawbar 8
Knob 8	CC 103 for Sysex to drawbar 9
Inc Button	CC 20 – Program /Combi/SetList up
Dec Button	CC 21 - Program /Combi/SetList dowm
Play Button	CC 22 – Play Song/Arp
Rec Button	CC 23 – Record Song
Damper/Sustain Pedal	Sustain CC64
Expression Pedal	Volume CC11 % of Master Volume
Foot Switch	Set in Global Mode to a parameter
Joy Stick Y +ve	Modulation
Joy Stick Y -ve	Assignable
Joy Stick X	Pitch Bend

See also Table of Midi CC messages at the end of this document and the Triton or Kronos documentation for CCs' which they send and respond to and which are unused.

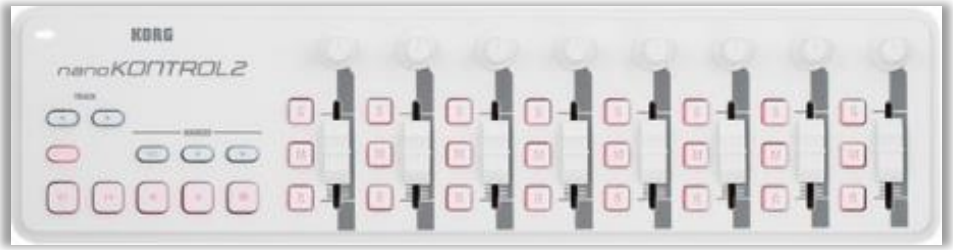
Once the NanoKontrol is set up ->

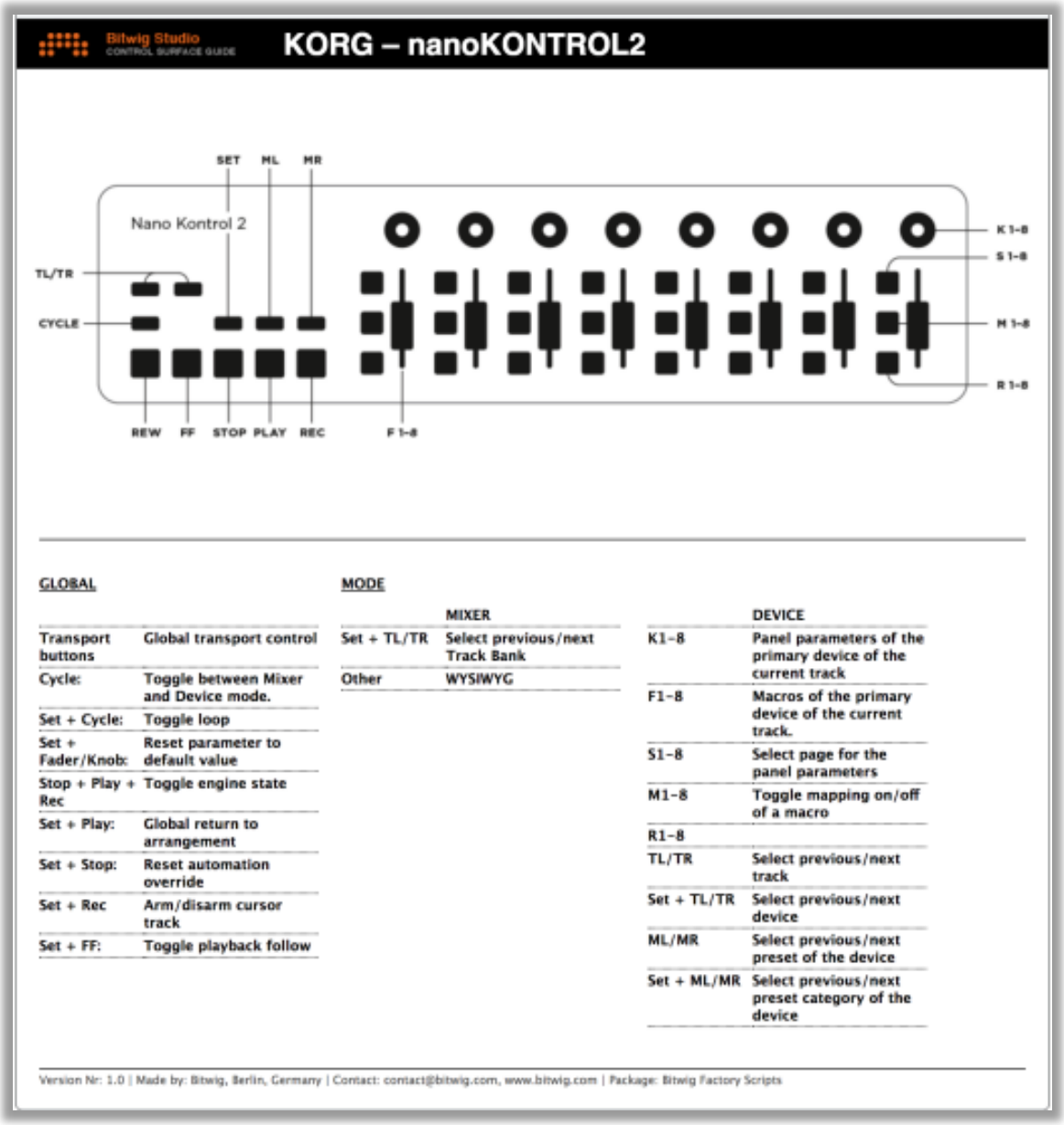
On the Triton and select Mode/Global/Controllers/Function assign.
Assign Knobs 1 to 6 as CC 24 to 29. Note knobs can control CC 0 to 119
Set Page Up and Page down to CC 20/21
Start / Stop CC 22
Then Write Global Settings

This now enables the NanoKontrol and Studio to control the Triton.

Remember the 'Cycle' button on the left of the NanoKontrol toggles between DAW mode and Controller mode. Use the Latter Mode which if not connected to a DAW is the only option.

Korg NanoKontrol 2 – Black or White !





NanoKontrol – DAW & Device Mode Features - Copyright Bitwig GMBH.

Note. For manu DAWs it works straight out of the box. Transport controls set up automatically. For Bitwig set the nanoKontrol to 'Other Daw' = cycle + set when plugging in, this is the default when new. Press Cycle to change to control mode where you can control an instrument (Device) by CC. Press Cycle again to return to DAW(Mixer) Mode. Use NanoKontrol 2 (manipulated.js script). This allows control of any instrument in the chain on a track (if selected with the mouse) rather than just the first one as with the inbuilt nanokontrol 2 script. This script is in my install directory. Place in documents\bitwig studio\controller scripts folder.

SAMPLING MODE

The Triton has a full multisampler built in. It's not necessarily the simplest to use and some people use an external sampler or a DAW to do this. But with a little practice the Triton can do it all. It can take a user sample (wave file) and assign it across all keys or take multiple samples and assign each to a range of keys, which is normally more realistic. The disadvantage of a single sample is that it is pitch stretched other than around the sample note value.

1. Whilst in Sampling Mode, you need to load the sample file or files or record a sample or samples on the Triton using its audio inputs. For instance, you might have sample names C1pad. C2pad, C3pad, C4pad, C5pad, C6pad. The name describes the sampled note and a name

2. In sampling mode you need to assign samples to a key or keys and then name your Multisample. Also make sure you save them as stereo multisamples. With the sampling note eg. C2 at centre. You can also add crossfade at the sample loop points to make the sample smooth and continuous.

3. In Disk Mode select Load Sampling Data and select Sampling Mode only. This creates 3 items: a folder containing samples (.ksf), a KSC file and a UserBank KSC. Make sure that all three are always together in your HD. If you don't save the samples they will be lost if you turn off the Kronos.

4. In Global Mode, KSC Autoload tab and add your newly created UserBank.KSC then press Autoload Now.

5. In Program mode, create a program based on your new samples by selecting your newly selected MultiSample in the OSC section and use convert MS to program. Save the Program. You can adjust the ADSR of the sample so it does not cut off sharply etc. You can also add MFX/IFX to the program.

CONDITIONS OF USE

License Conditions for Triton Tools Software

1. **Please support this software's development. Donations for the software can be made at PayPal** Donate (paypal.com). **Please Pay what you think it is worth.** 😊 You can also get a link to my Paypal donation page in the Help Menu.

2. The licensee is entitled to install the full software on PC's belonging to them.

2. The licensee shall not give the software to other people, resell it, distribute it, post it on a web site or attempt to decompile it or reverse engineer it.

3. The license is non-transferable.

4. At the moment the licensee will be entitled to free updates for future releases of the software. These updates will be available on my website.

5. The licensee may ask for support from the author to assist them in operating the software.

6. Licensee's may request new features. The author may implement them if they are feasible and the code does not take too long to write.

8. The licensee is solely responsible for the consequences of use of the software and any damage to equipment or loss of data shall remain their responsibility.

If you accept the license terms then you may install the software.

I would appreciate any feedback on layout, features, bugs, documentation, reviews, and tips' on using the software or the Triton or ideas on how to make it better.

If you need any help at all please e-mail me.

Thank you once again.

Stuart Pryer

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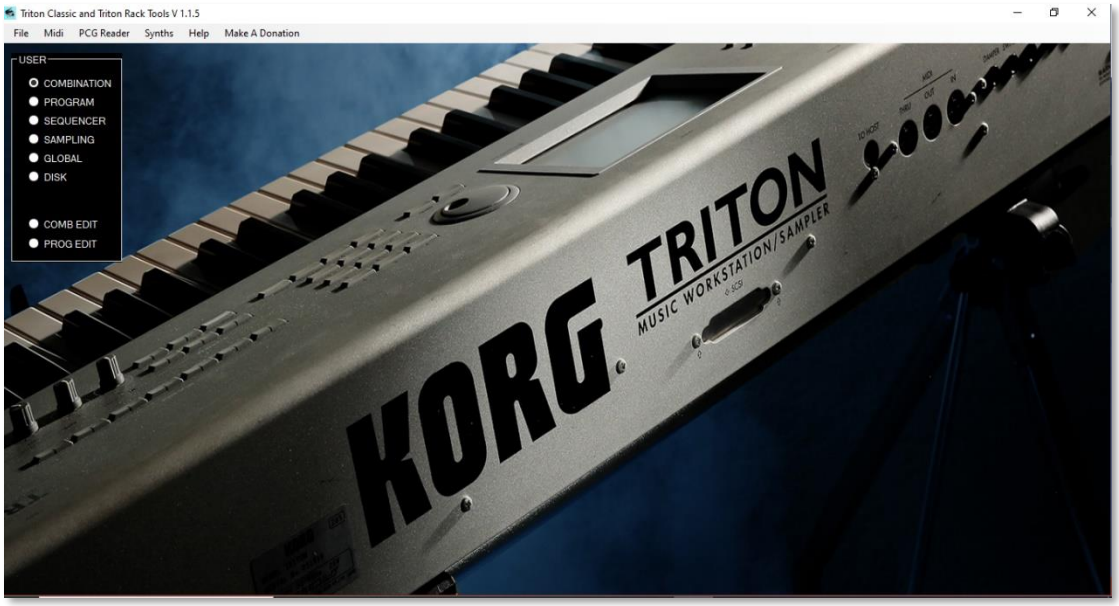
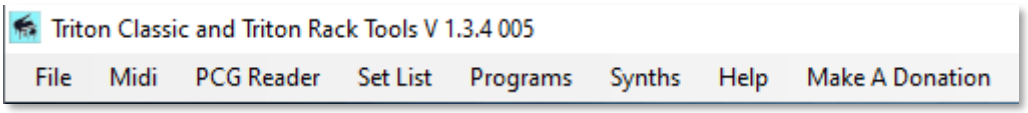
TRITON TOOLS – MAIN FORM



The main screen has a menu system at the top. Each menu item is described in detail later.

1. File /Exit– closes the midi port and application.

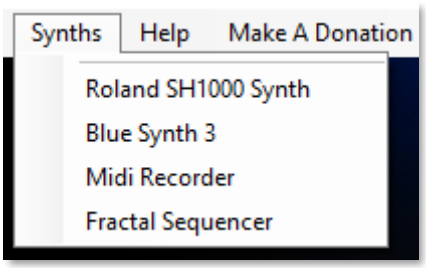


2. The Midi - menu allows the user to set up the midi input/output port for the software. This is used to turn on or off the midi in and out ports or if the user wants to change the midi routing. It also contains the Midi Mapper. There is also a two-octave keyboard. Note to use midi you need to have at least one midi in and one midi out connecting the Triton. Make sure midi thru is off. Finally, the third menu is an 88 note virtual keyboard.

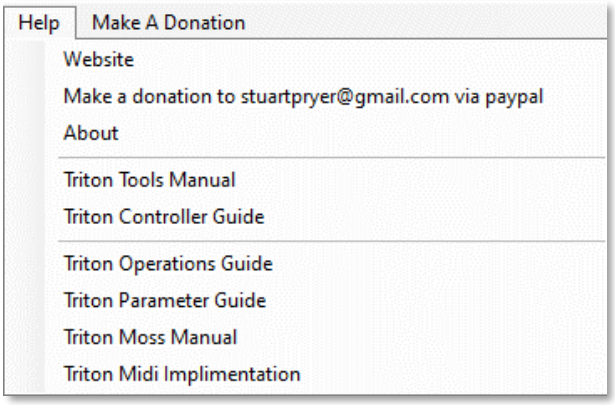
3. The PCG reader is a major feature which allows you to send pcg data by midi sysex to the Triton. It works with Korg PCG files or my proprietary PCH files – collections of thousands of programs. You can also save favourites and do midi dumps and then send back to the triton or insert them inti PCH files. A midi data filer.

4. Setlists allows you to create a list of programs, combis or moss sounds and enables you to play them in the correct order at say a gig.

5. The 'Synths' menu shows a pdf of my free Roland SH1000 synth emulation. It runs in Reaktor 6.x (Full or free Player version) as a standalone or VST/AU plugin in a DAW, Windows and Mac. The sh1000v24.ens ensemble can be found in Kronos Tools installation directory. There is also The Blue synth 3 VST dll plugin and the stand-alone version in the installation directory plus my Midi Recorder and arpeggiator. Finally a link to my Fractal Sequencer software.



6. The Help button accesses my website and the Triton Tools.pdf help file. This is installed automatically with the software in the installation directory. Updates can be downloaded from my website and the pdf file can be overwritten. Please keep the name the same. 'TritonTools.pdf'. All sliders have tooltips. Just hover the cursor over the control and the tool tip appears and shows the value. Hold Ctrl and arrow buttons for fine control. There is a link to Paypal if you can make a donation for the software.



There is also quick access to the Operations Guide, Parameter Guide, Moss Manual and Midi Implementation Manual. All Copyright of Korg Inc.

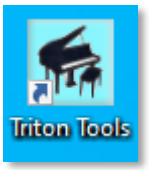
INSTALLING ON A PC – WINDOWS

NB. To install on a Windows computer, log on with administrator rights and run the installer TritonToolsSetup.msi. The associated setup.exe file ensures the .net framework is updated if needed and the installation is properly managed.

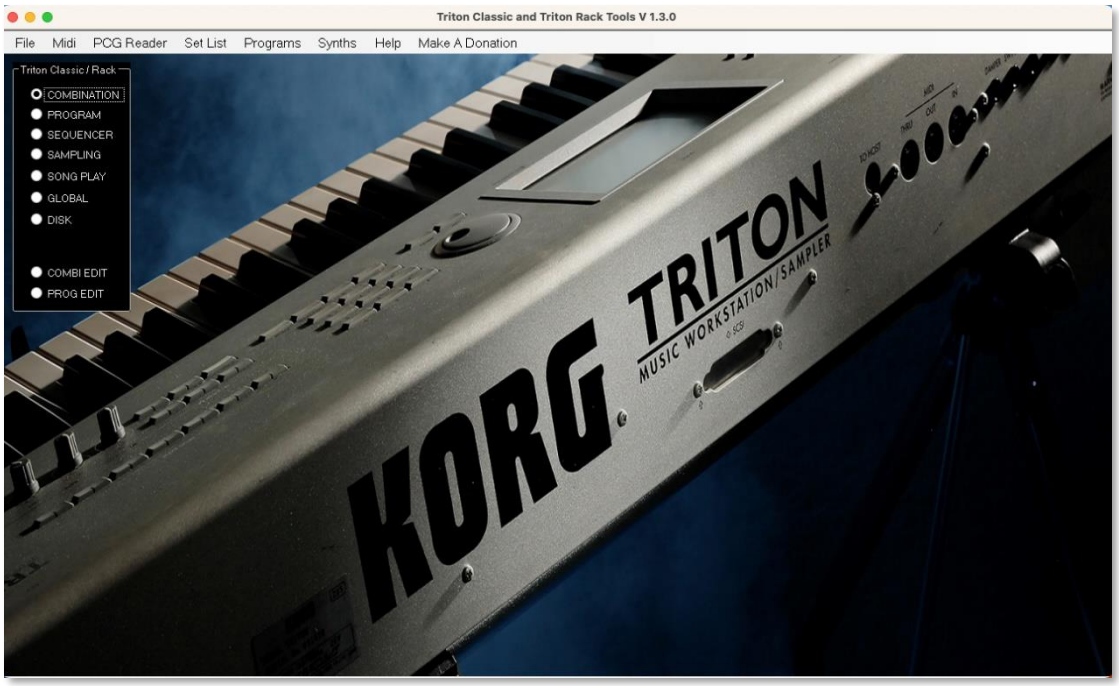
The MSI installer contains the software, installer, free synths and pdf manuals. There is a separate executable setup.exe which checks the .net framework on your pc is up to date (4.7.2 or higher) and the software installation is properly managed. Note. The synths and documentation will be installed in the programme directory. C:\program files\Triton Tools for 32 bit operating systems or c:\program files (x86)\Triton Tools for 64 bit OS pcs. NB. Software updates will normally consist of just an updated MSI file and setup.exe. **The previous version must be uninstalled first.**

The PC should be running preferably Windows 10 or 11. 32 or 64 bit. Updated with .net 4.7.2 or higher. Recommended PC spec. Intel Core i3 or higher, 4GB RAM, Screen resolution 1280x720 or higher. Min Spec. Intel Atom processor, 2GB RAM screen resolution 1024x600. The software takes up about 38Mb of disk space. It may run in Windows 7 but I have not tried it.

It has been written in the latest version of Microsoft Visual Studio 2022 and the installer has been created using the Microsoft Vsix installer project. It is a 32-bit application but will run on 32- and 64-bit systems. Note. A shortcut will be placed on the windows desktop, add and remove programs list and the start menu.



INSTALLING ON A MAC



You can run Triton Tools software on a Mac. To do this you can use Wine which is a great free app. I'm currently running Wine version 10.6 which runs my software perfectly. On Apple Silicon Macs with M1 or higher processors it will use Rosetta 2 which will install automatically. Wine is a Mac application which enables you to run windows applications in its compatibility layer.

On a Mac, Core audio and USB midi drivers typically require sysex data to be broken down into smaller 'chunks'. This is generally not an issue on Windows. The default value on this software is 127-byte chunks with a gap of 20 ms between each chunk being sent which should work without issue. If you have problems you can vary the chunk size between 7 and 768 bytes. The delay can be adjusted between 0 and 200ms (milli-seconds).

These values should work by default. If they don't they may need to be adjusted depending on your USB midi driver and hardware. If you have problems with your hardware receiving Midi, try Chunk values of 63, 127, 255, 511 bytes to start with. 20ms timing should be ok but you can increase it if needed. It requires trial and error. Use a midi monitor app whilst adjusting to make sure sysex starting at F0 and ending with F7 is getting through. A 'PCM program' has a transmitted size of 625 bytes starting at F0 with the header and ending at F7. Some cheaper Midi

Hardware will not transmit large sysex messages successfully. I have a cheap midi interface which won't, but my KA6 mk2 and an old Midi Man 4x4 Midi interface work fine.

Note the Midi chunk size and delay between chunk values are stored in the registry when you 'close the midi port'. They are reloaded when you click on the button. 'Last used Midi In/Out Settings'.

```
My.Computer.Registry.SetValue("HKEY_CURRENT_USER\Triton", "Triton Tools
Midi Delay", TrackBar5.Value)

My.Computer.Registry.SetValue("HKEY_CURRENT_USER\Triton", "Triton Tools
Midi Chunk Size", NumericUpDown5.Value)
```

Once you have found the Chunk size and delay settings which work for your set up, you won't need to do this procedure again. These values are used for Midi Out from the software. Midi In to the software such as a midi dump is controlled by the external hardware and the software can adapt to suite.

INSTALLING ON A MAC - WINE.

To run the software, you need to download and install the latest release of Wine - I'm using Wine 10.6 - and also the GStreamer.framework. On the Mac, allow the software to run in the Mac's privacy settings as it's not from the app store but from Github.

It is free and can be downloaded via

https://www.winehq.org/ 

1. Once the two apps above are installed, just follow the wine command line instructions to run my TritonToolsSetup.msi which will install the software from the folder your msi is in. I just place the TritonToolsSetup.msi and the accompanying setup.exe in my user folder. Wines default folder.

2. The command line to install is msiexec /i TritonToolsSetup.msi

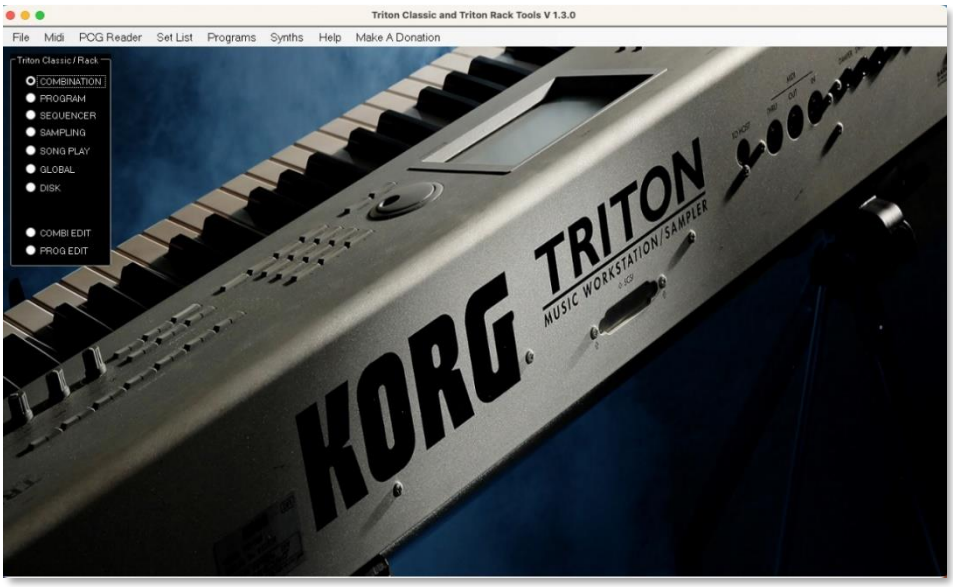
3. The software will be installed in a .wine hidden directory username\.wine\drive_C\program files (x86)\triton tools\triton tools\triton tools.exe To see the hidden .wine folder on you mac cmd +shift+(period .)

4. Finally create an alias to the Triton Tools.exe file to put on your desktop so you can launch it easily.

Tip. This is optional. If you want to see the button colours so they are like windows button colours you just run winecfg from Wine Terminal, and goto graphics and change theme from Light to None. To uninstall run 'wine uninstaller' in terminal. You can actually 'install software' from the uninstaller form too!

Mac spec. OSX Mojave or higher, i5 or higher, 4gb ram or higher, Screen resolution 1280x720 or higher. Will run on Intel and faster on Apple Silicon. For soft synth users - The IAG driver (create Bus 1, Bus 2 etc) on a mac provides internal midi routing as standard. Macs are easier for routing internal midi. Windows requires third party software.

INSTALLING ON A MAC - CODEWEAVERS CROSSOVER



Note. Crossover can send extra spurious characters when sending program change messages so you may have issues with the program library sending Midi. I've reported the issue to Codeweavers. If you have issues just use Wine. If you use Apple Silicon and M series processors then Crossover 25.1.0 and the latest version of Wine 10.12 will run 64/32-bit windows applications. They both run under Rosetta 2.

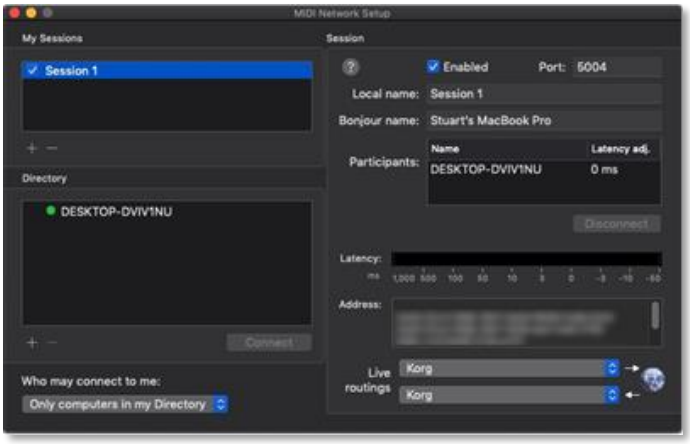
This software will run on a Mac/Macbook running MacOS Mojave or higher, using the paid software Crossover 25.1.0 or higher. The software is sold by https://codeweavers.com and is based on 'Wine 10'. A free 14 day trial is available on their website. This software is in the Codeweavers compatibility C4 database. Codeweavers have added a lot of libraries and drivers to Wine and if you don't like using Terminal then Crossover is simpler.

1. Install Codeweavers Crossover 25.1.0 or higher.
2. Set up a Windows 10 – 64 bit bottle.
3. Point Crossover to the TritonToolsSetup.msi installer.
4. When done, click on the new Triton Tools shortcut to run the software.

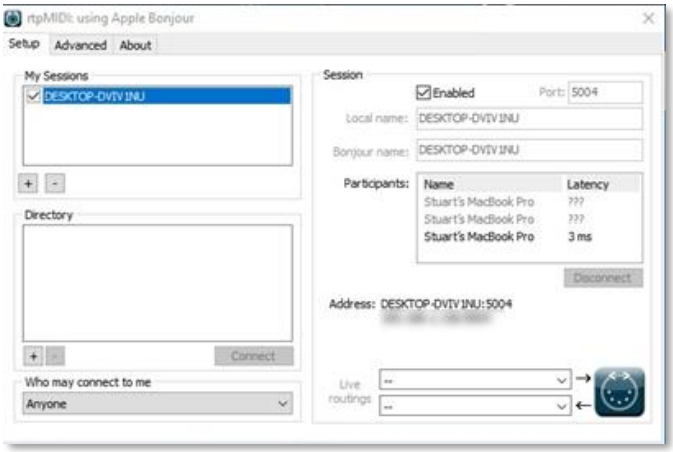
Tip. This is optional. If you want to see the button colours so they are like windows button colours you just go to Crossover / Wine graphics and change theme from Light to None.

USING A MAC & PC

If your studio computer is a Mac connected to your instruments you can run this software on a PC and connect to the Mac as an intermediary, then to your instruments/midi interfaces. The advantage of using a Mac as the intermediary, driven by the PC is that the full software works just like on a PC. You can route two-way Midi data via a Mac using the free rtpMIDI program on a PC. rtpMIDI | Tobias Erichsen (tobias-erichsen.de), Below is the Network Midi screen of the Mac (my Studio Computer). Mac Midi setup – Globe. Note the input and output ports are set to Korg – a midi interface connected to the Korg Triton. It is connected via my network connection (wirelessly or through a network switch) to rtpMidi running on my PC – computer name DESKTOP-DVIV1NU. The latency is 0 to 3ms. The Mac calls it Session1. I recommend using a network switch which also gives ultra-low latencies. If you use wireless you might need to set up port forwarding on your router.



Below is my PC screen. rtpMidi is running and is connected to my Macbook Enable the session by checking the Enabled box on the PC form



On Triton Tools set midi input/ output to the name of your pc desktop. In my case Desktop-DVIV1NU

Triton Tools on the PC is now connected midi in/midi out through the Mac to the Midi interface and the Triton Synth. Now a two-way MIDI connection is established between the PC, Mac and synth.

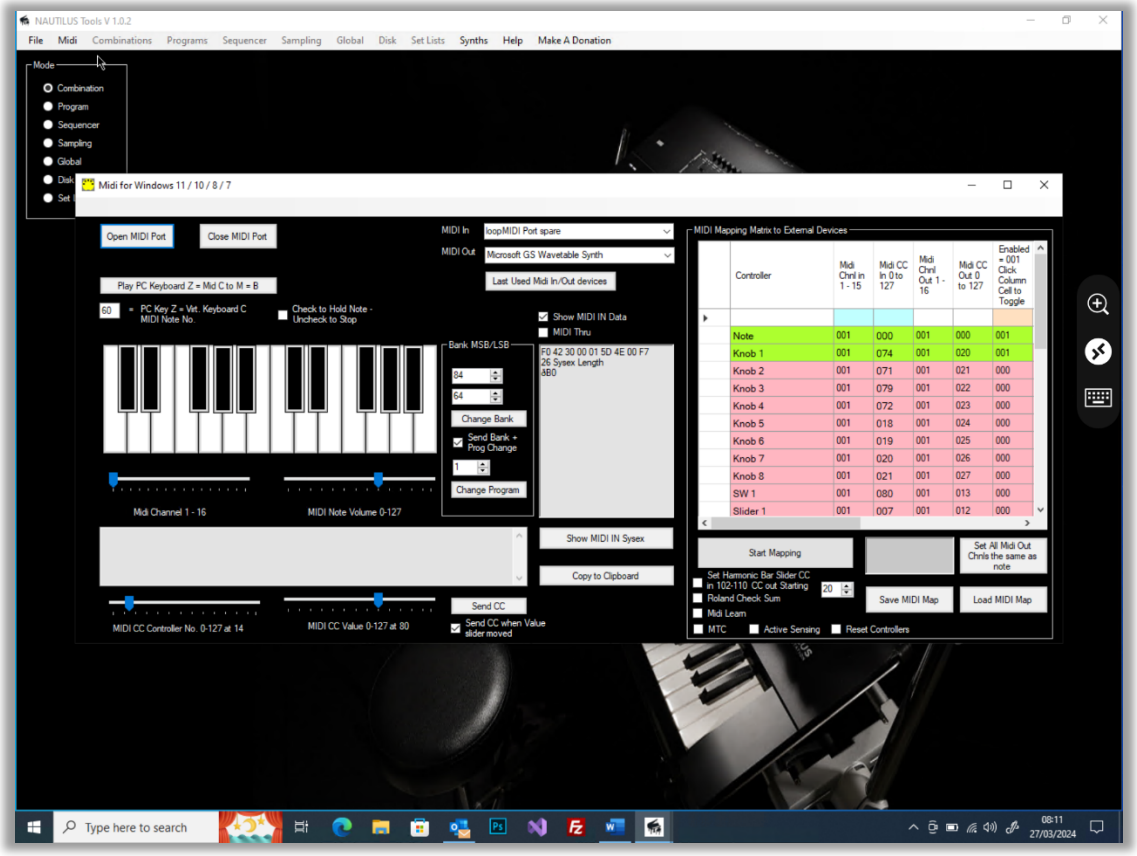
If you want to control the PC and see the windows desktop on the Mac use Microsoft remote desktop (now called Windows) on the Mac too. Get it free from the app store.

USING AN IPAD, IPHONE OR ANDROID DEVICE WITH THE SOFTWARE

The software can be controlled by an iPad or iPhone etc. sitting on your Triton. This makes it very convenient to use. In fact, any phone, tablet or computer which runs Microsoft Remote Desktop – RD for short – will work. E,g, Android devices. So now you can control the software using the touch screen of the Tablet or phone. To use this setup, download the Free app on your device – Microsoft Remote Desktop (RD) – from the App store or Play store. You can control all features of the software this way without needing to be near your PC. The PC only needs to be connected by Midi to the Triton.

1. Open the RD app on the handheld device. Make sure blue tooth is on both PC and the hand-held device. Both need to be on your local wireless network. On RD you need to enter your PC's name, your login and password for the PC. to connect.
2. In the RD app make sure you send Audio to your remote PC and not the iPad. Otherwise, the software will not be able to access your midi ports on your PC to connected to your synth. It will try to find the midi ports on the hand-held device.

Below is a screenshot of my iPad screen. The three RD icons on the right allow you to zoom in and out by 'pinching', access to the RD home screen and onscreen qwerty keyboard. Instead of a mouse you use the hand-held devices touch screen. The whole windows 10 desktop is visible.



As you can see the image quality is excellent. You have access to all of Triton Tools software's controls and forms.

USER MANUAL

Important. This pdf help file Triton tools.pdf will be copied to the same folder as the software's exe file during installation. Normally C:\program files\.... - do not change the pdfs name. NB. The help file won't work if you name it 'something else' or it's placed in another folder. You will be able to access it from the program 'Help' Buttons which will automatically open your browsers pdf reader and then open the file. Tool bar tips also appear for some commands,

STARTING THE SOFTWARE

Your PC should be located adjacent to the keyboard. Ideally with the keyboard of the PC at right angles or above the keyboard. As the software is mainly mouse driven, all you really need near the keyboard is a screen and mouse. Connect the two devices using midi cables or usb between the PC's midi port/usb port and the Triton. USB hubs are not recommended unless they are powered.

Turn on the Triton, turn on the pc and run the program. When you run the program, configure the midi device by using the **'MIDI'** form. Then set the midi channel of the software (I normally use 1 – this is the default value). Then open the midi port.

Please contact me if you have any problems.

WORKFLOW

Important points!

This software sends and receives Midi Channel Voice messages, Control Change CC messages and System Exclusive (Sysex) messages.
Features :-

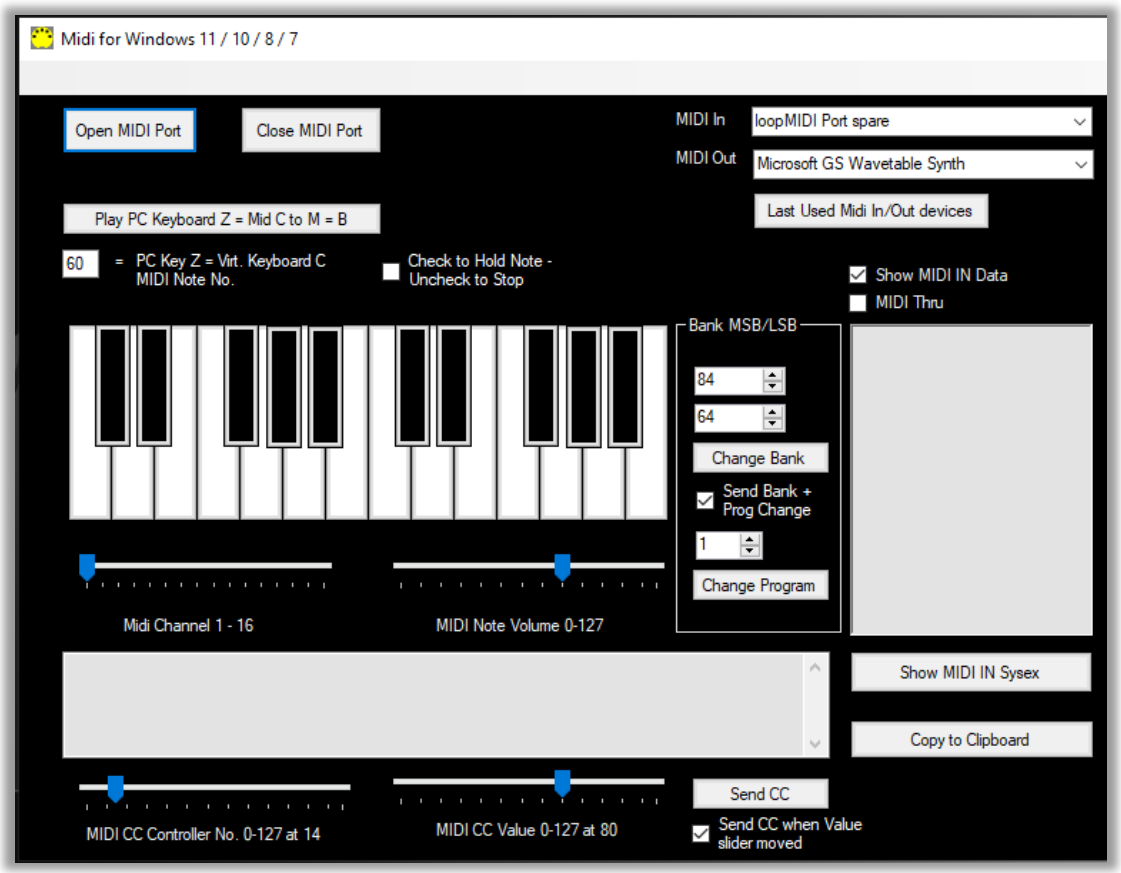
1. You can send Triton Programs, Combinations or Moss programs to the Triton using Midi. You don't need a floppy disk.
2. The Midi Mapper converts and incoming Midi,CC/Note etc to CC, Sysex etc on any outgoing Midi Channel
3. You can change Mode – Program, Combi ,Moss etc.
4. You can send and receive Midi Dumps.
5. You can use PCH files which contain thousands of PCM Programs or Moss sounds and send sounds individually to the Triton from the computer to audition and then save.

Remember. Once you have edited a sound it is still in the temporary memory of the Triton. You have to WRITE it on the Triton and save the program to a location in one of the program banks. If you don't it will be lost when you change programs or switch off.

OTHER RECOMMENDED SOFTWARE

1. Triton Controller. My librarian, editor and also you to send and receive korg PCG data via midi plus a lot more. https://Stuartpryer.co.uk
2. PCG Tools– A Windows PCG Librarian by Michael Keijzers v 3.2.0 PCG Tools | Kronoshaven.com

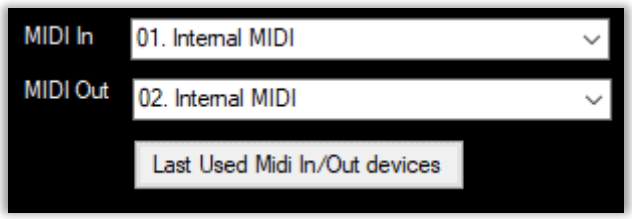
SETTING UP MIDI IN/OUT IN THE SOFTWARE



This software generates Channel Voice data, Control Change (CC) data and system exclusive (sysex) data for sending to the Triton and can also receive this data from the Triton.

Connect the Keyboard or controller to the PC (midi ports or usb). For the Triton I use Din midi cables to my audio/midi interface. It's very reliable. Make sure the Windows Korg usb driver is installed (Vendor) if you want to use Midi over USB for other Korg products such as Nanopad. On windows the driver has to be in the first 10 midi device slots. Korg has an app to check and amend this called 'Uninstall Korg midi device'.

The generic Mac OS driver is MIDI class compliant from Catalina and uses the operating systems in-built midi driver. Korg mention the class compliant driver may be less reliable if multiple Korg devices are used as it works in Midi exclusive mode? I have not found this to be the case.



On the Settings/Midi Settings form select the MIDI In and Out devices. To start with set Midi out to Triton. See Mapping Midi Messages section for various Midi routings. Set midi out and midi in on the PC. Click 'Open MIDI Port' button. The button will turn Green. When you close the MIDI Port the Open Midi Port will turn pink and the software saves your selection of Midi In/Out devices to the Windows Registry, so next time you can just click 'Last Used Midi In/Out devices' and Open the Midi Port and you don't have to reselect. If your device list changes you will just need to manually select the devices again.

```
("HKEY_CURRENT_USER\Triton", "Triton Tools midi in", 1)
("HKEY_CURRENT_USER\Triton", "Triton Tools midi out", 3)
```

These are the two registry keys used to record the Midi Settings recorded from last use.

Midi/Settings on menu bar. An example of the midi devices in/out is shown above. Your list will look different. For downloading and sending settings from/to the Triton set both Midi In / Out to Triton.

1. Set midi channel to correct channel – default on this software is 1.
2. To check all is working, use the mouse to play the virtual keyboard - OR
3. You can play the Midi software or device from the PC keyboard. Press 'Play PC Keyboard Z= Mid C…' button **immediately** before playing the pc keyboard.
4. The Triton should sound its current program.

You can hold a note set by the text box with 60 in it by checking the Hold Note checkbox. The Note number box will turn green. The note is releases when it's unchecked. You can change the Midi Note number from 60. 0 to 127.

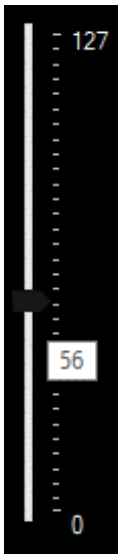
The 'Midi Through' checkbox allows data to pass from the midi in port to the midi out port of this app. If unchecked it won't pass through - default. Note if midi thru is enabled in this software and your device you will get a midi loop and crash the app. Midi thru is used if you are generating midi from another app/device and monitoring it here before forwarding it with this app to yet another app/device.

EXITING THE SOFTWARE

To Exit the program, click on the 'File/ Exit' drop down menu at the top left when the composer form is loaded. The software will close the midi port and terminate the program. Use this rather than closing down the window with the Window's 'X' top right-hand corner of the main window. This is so all notes are stopped and the midi port is closed properly.

TOOLTIPS

Tooltips are provided for all slider controls

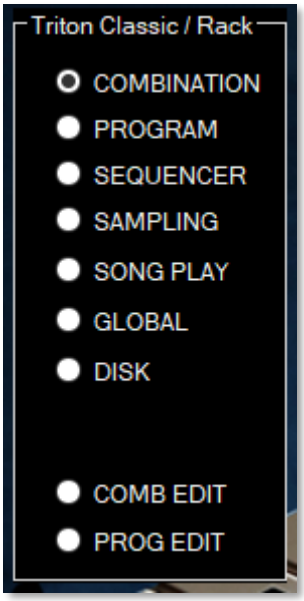


A typical Slider Tooltip showing precise values. Hold Ctrl and use the arrow keys for precise movement.

SETTING THE MODE

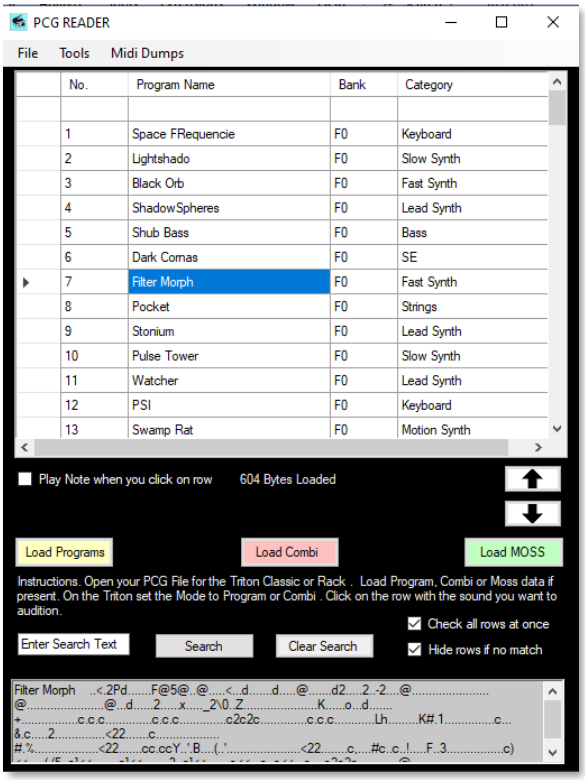
This group box appears on the top left of the main form. The title of the group box indicates the model. Triton Classic /Triton Rack.

There are 9 principal modes which the Triton Synth can be in. Make sure Midi out of the software is connected to Midi in on the synth. Open the Midi Port. You can change mode by clicking on the Radio Buttons. See Below.

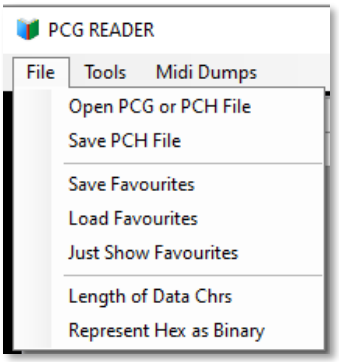


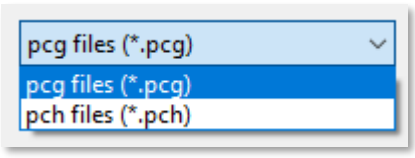
Note. When using sysex to change parameters or sounds on the synth you need to be in the correct mode if the synth is to respond to the Sysex, so to send a PCM program to the Triton it needs to be in 'Program' mode and not Combination mode. Note PCM stands for pulse code modulation. Korg use the term HiSys synthesis. In fact, apart from Moss, the sounds on the Triton are samples.

PCG READER



With this form you can Open PCG files and PCH files. PCH files are a collection of PCG files created by my Triton Controller software, two are included in the installation directory. They can contain thousands of sounds. To open a file, click on 'File' / 'Open PCG or PCH file' top menu item. Choose the file type (PCG or PCH) from the drop down at the lower right of the open file dialog.

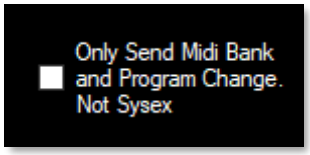




You can then load PCG Program Banks, Combination Banks and Moss Banks. Or Program PCH or Moss PCH files. The Up and Down arrows will page up and down the bank listing 13 rows at a time.

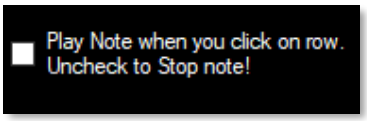
*2 : Program		Combination		MIDI Out[Hex]	(Bank Map is KORG)	(Bank Map is GM(2))
BankA	000 - 127 :	BankA 000 - 127 :		mm,bb,pp	= 00,00, 00 - 7F	= 3F,00, 00 - 7F
B	000 - 127 :	B 000 - 127 :			00,01, 00 - 7F	3F,01, 00 - 7F
C	000 - 127 :	C 000 - 127 :			00,02, 00 - 7F	3F,02, 00 - 7F
D	000 - 127 :	D 000 - 127 :			00,03, 00 - 7F	3F,03, 00 - 7F
E	000 - 127	:			00,04, 00 - 7F	3F,04, 00 - 7F
F	000 - 127	:			00,05, 00 - 7F	3F,05, 00 - 7F
G	001 - 128	:			79,00, 00 - 7F	79,00, 00 - 7F
g(1)-(9)	001 - 128	:			79,01-09,00 - 7F	79,01-09,00 - 7F
g(d)	001 - 128	:			78,00, 00 - 7F	78,00, 00 - 7F

Bank/Program change Midi CC Messages. By sending these messages you can change Program and Bank using Midi. You can use the PCG Reader form or the Settings form to send these messages.



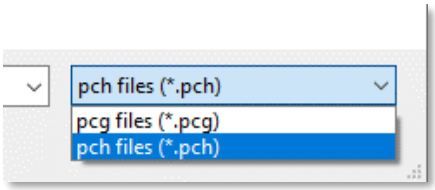
If you click on a row in the PCG reader and this check box is checked then Midi Bank and Program change messages will be sent instead of sysex. But you need the same PCG file loaded in the Triton and this software otherwise the names/sounds will be wrong. Normally this box is unchecked.

To audition the sound on the Triton. Connect the Triton to the software – Midi in/out. Select the Mode you want. Eg. Program, Combination or Moss on the Triton. You can use the Mode form for this. Then by clicking on a line, the program data or combination data will be sent by Midi sysex to the Triton. You can then play notes on the Triton.

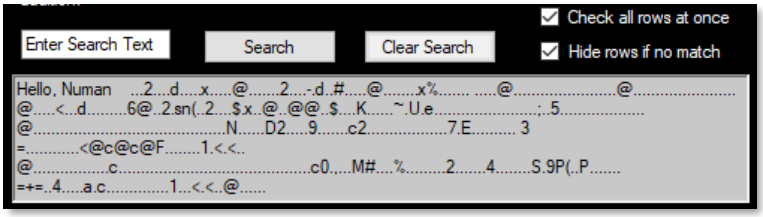


If you check the checkbox above you can audition the note just by clicking on the row and don't have to press a key on the Triton. The note played, channel and volume are selected on the Midi Settings form. Play a note on the midi form first, just to check midi is working and the volume is not too loud. Unchecking the box will turn off the note immediately. This is the Panic button. Notes will decay as per their release envelope unless another row is selected or the checkbox is unchecked. The 88 note virtual keyboard is also very useful for auditioning sounds as you can play chords and runs too.

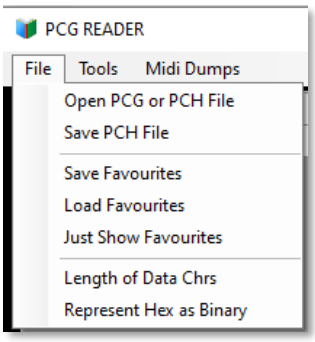
PCG files contain 128 sounds per Bank. But PCH files can contain thousands of sounds in just 1 file. There are two PCH files in the installation directory containing 18 PCM banks "pcmMasterpch18banks with classic light" containing 2304 programs and 9 Moss Banks "Moss9masterpch.pch" containing 1152 programs. These files can be created in my other software, The Triton Controller. You can toggle the file selection between PCG and PCH files using the drop-down box at the bottom right when you open a PCG/PCH File dialog.



The large text box below shows a representation of the currently selected Program, Combi or Moss Program's binary data of the row you clicked. The Program Name is always readable as the first 16 characters (bytes).

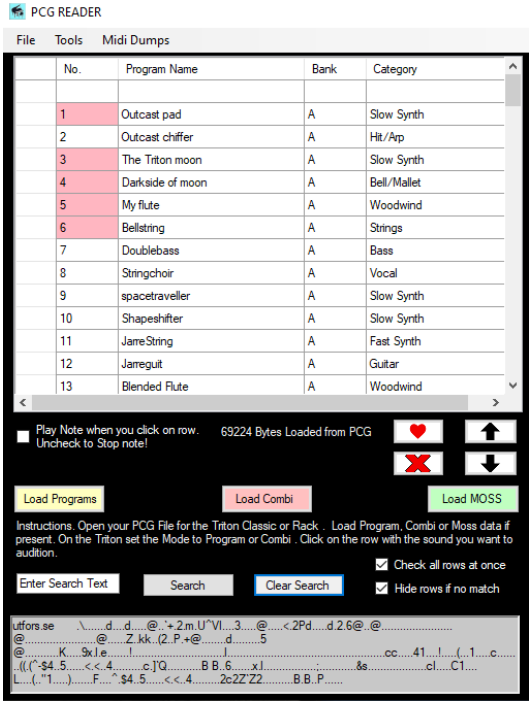


FAVOURITE PROGRAMS



Once you have loaded Programs, Combinations or Moss data you can mark the rows (the sounds) you like and save them as a favourite file. All you do is click on the row(s) you like and then click on the 'Heart button'. To clear the row and make it no longer a favourite just click on the cross button.

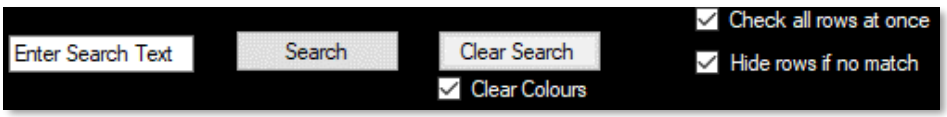
Below I have selected 5 programs which I want as favourites. When done you just click on the 'Save Favourites' menu item. Give the file a name related to the program file you loaded so the two are associated. The file will be a plain text file and will have a .fav extension.



When you want to load the favourite file again just click on the 'Load Favourites' menu item. Load the favourites file with the .fav extension.

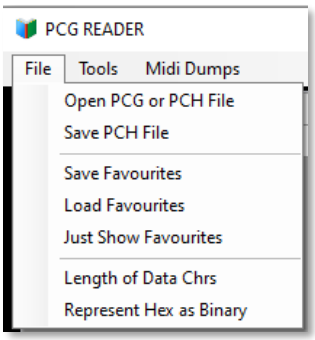
To show a list of favourites and hide the other non-favourite rows, just choose the menu item 'Just Show Favourites'

Above just the Favourites are shown. To return to the complete program list just click on 'Clear Search' and it will relist all rows. To retain the pink 'favourites' just uncheck the 'Clear Colours' checkbox.



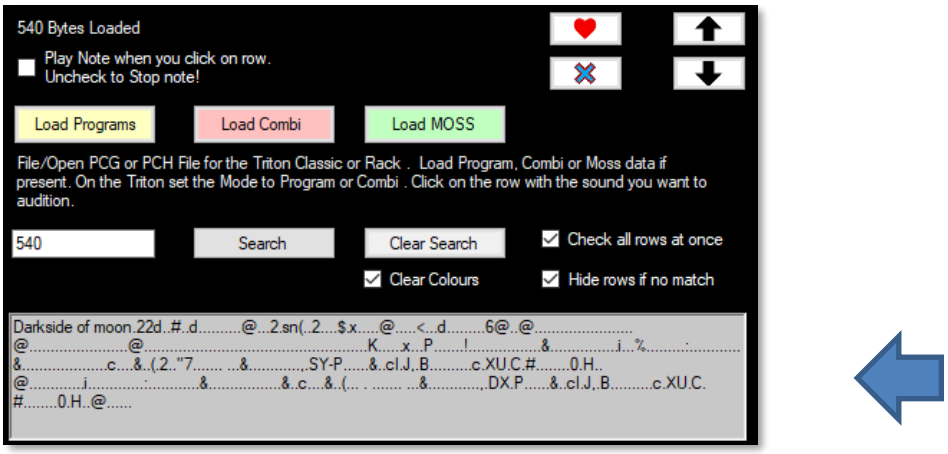
To edit a favourite list just click on either the Heart or Cross buttons to add or subtract pink entries. Then Save Favourites again, which will include any changes.

LENGTH OF DATA IN LOWER TEXT BOX



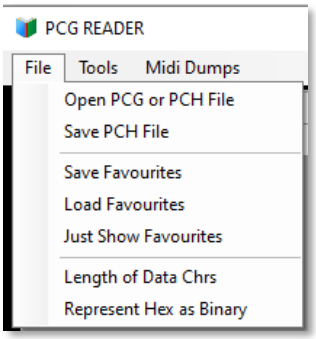
The 'Length of Data Chrs' menu item returns the size in characters (Chrs) of the data in the big bottom text box (blue arrow). The size is reported in the text box by the green arrow.

If it's in Hex then 2 characters and a space = 1 byte. If it's in binary, then 1 character = 1 byte. Below there are 540 Chrs\bytes in this program pcm file. If it were a Moss program it would be 604 bytes and a combination 448 bytes. That's without any proceeding headers.

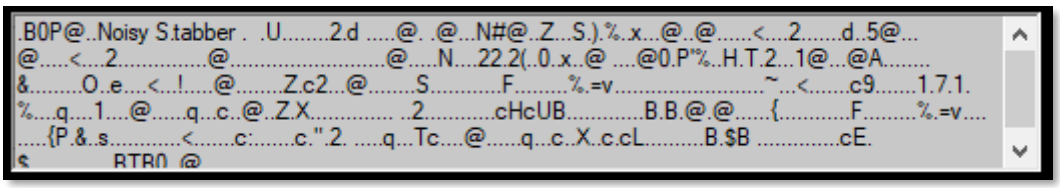


REPRESENT HEX AS BINARY

Sometimes you might want to see what the binary representation of a Hex file is, say a Midi Dump, to see the program name for instance.



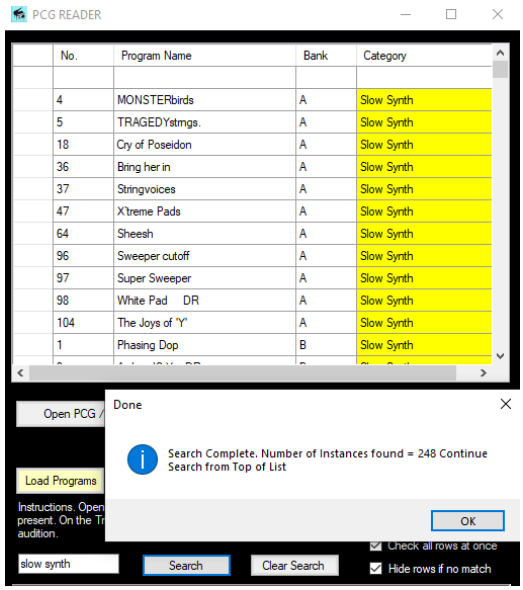
If you click on the 'Represent Hex as Binary' menu item it will convert the Hex in the lower text box to a binary representation. See Below. The Midi dump of 'Noisy Stabber', firstly converted to 8-bit and then shown as a binary representation.



SEARCHING FOR SOUNDS

You can search for text by number, name, Bank and category. This helps you find the sound you want. Enter your search text in the box. Click search. Below I've searched for "Slow Synth" returning 248 programs in the PCH file. If the user types a word in the white 'Search' box, the first occurrence moving down the list will be marked with a yellow background. Press 'Search' again to find the next occurrence which will also be marked in yellow again. Rows where search item is not found will be hidden if the lower check box checked - Default. All Rows will be searched at once if the upper check box checked. Otherwise, you need to click 'Search' after each find.

'Clear search' clears the yellow search results boxes, moves the caret to the first program and relists all the rows. Current caret position in the list is coloured blue and searches are performed moving down the list. The search is not case sensitive so searching for 'Piano' will return 'Piano' or 'piano'. If you uncheck 'Clear Colours' then when the original list is restored any pink favourites or yellow search items are not lost.

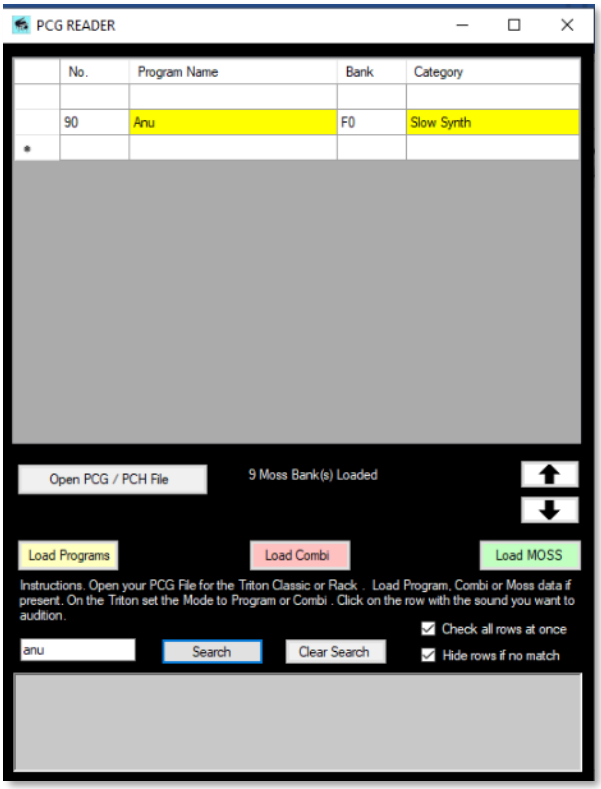


Searching for the word 'Slow Synth'. Searches are not case sensitive. The message box reports that 248 instances were found and they are coloured yellow.

If you search the whole list for 'Slow Synth' you will get a shortened list with rows with 'Slow Synth' in. Then Search by 'Stringvoices' and you get an even shorter list which will only include 'Slow Synth' **AND** 'Stringvoices' on the same row. All instances where the search text is found will be Yellow.

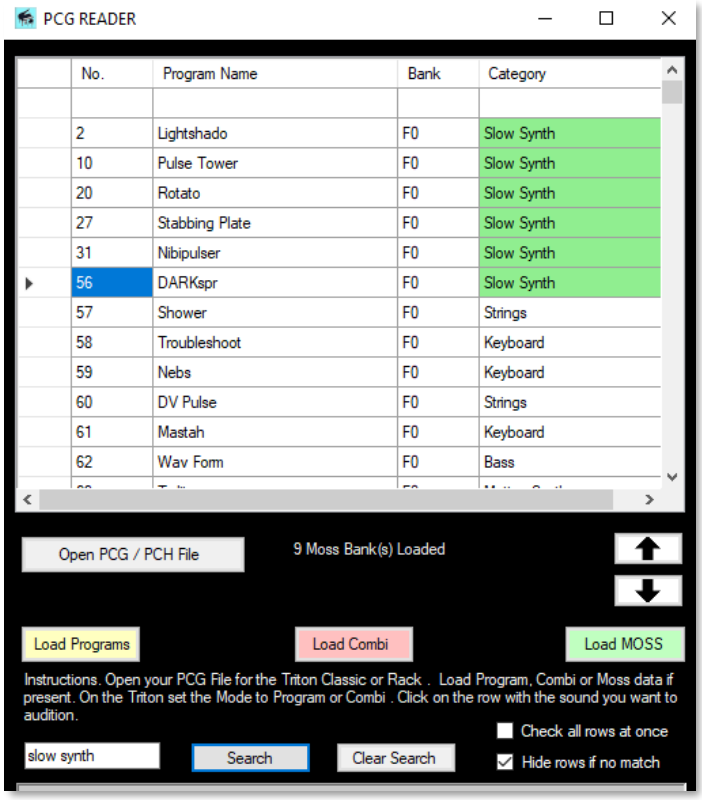
And / Or Searches

- If you hide rows when search item is not found and then search again, the result will only show rows with both search 1 **AND** search 2 in them. See Below. First search for 'Slow Synth'. Then 'Search' for Anu.

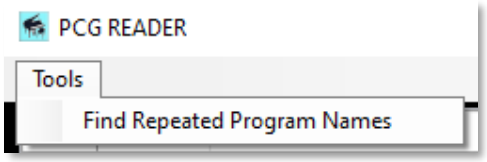


- If you clear search, then uncheck 'Hide rows when search item is not found' and you search again, the result will show rows with either search 1 **OR** search 2 in them.

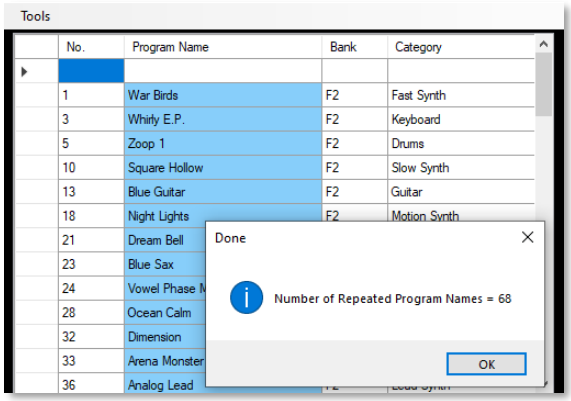
Searching one click at a time. If you uncheck the 'Search All Rows at Once' checkbox then search for the word 'Slow Synth' say, the Search will move one instance at a time for each Search button press. Cells where 'Slow Synth' are found will be coloured in green otherwise they will remain yellow or white depending what was searched before. Below the current search row, the rows will contain the normal sequential unfiltered PCG data.



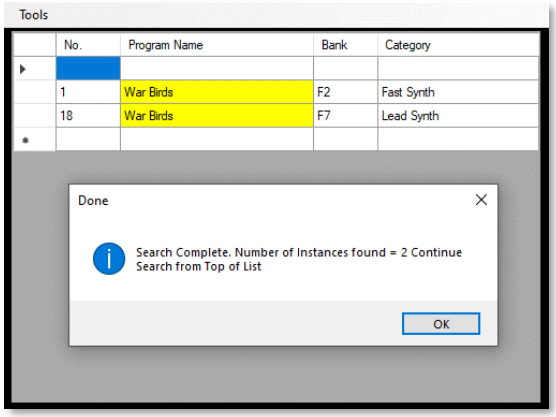
FIND REPEATED PROGRAM NAMES



To find repeated program names in your PCG or PCH files. Load your list of programs and click 'Find Repeated Program Names' - When a program name repeats it will be highlighted in blue after the first instance of each name and listed in order from top to the bottom of the list. The number of repeats is reported in the message box. Here over 1000 Moss programs are searched for repeats. Tip – It's always a good idea to use different names for different sounds!

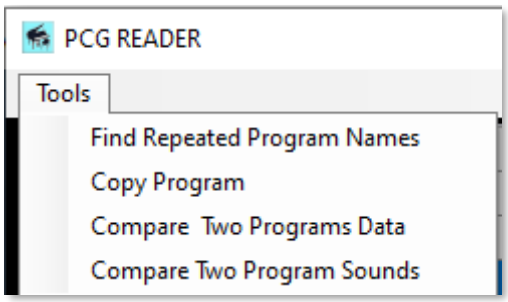


To find out where the repeated name is, just clear search and the search for the name you are interested in. See below. 'War Birds' appears twice. Bank F2 no. 1 and Bank F7 no. 18.



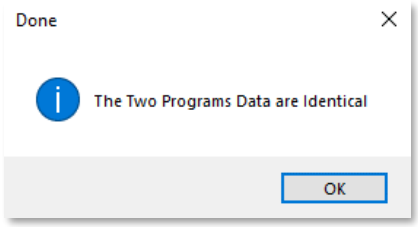
Note. Even though the names might be the same the sound might be different? So, it can be worth checking if they do in fact sound the same.

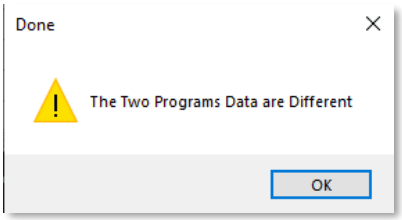
COMPARING TWO PROGRAMS



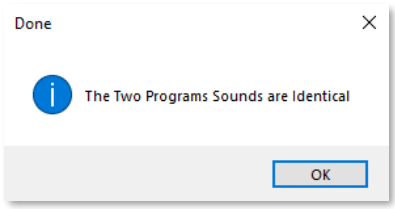
If you find repeated program names you can then compare their data and sounds. To compare every byte of one program with another you click on the row with the first program to compare. Then 'Copy' program. Then click on the second program to compare and then click 'Compare Two Programs Data'.

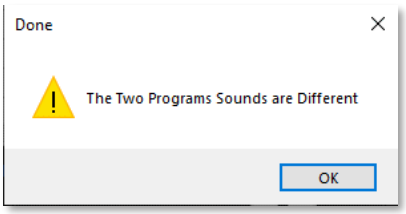
You will then get a message box showing either:-





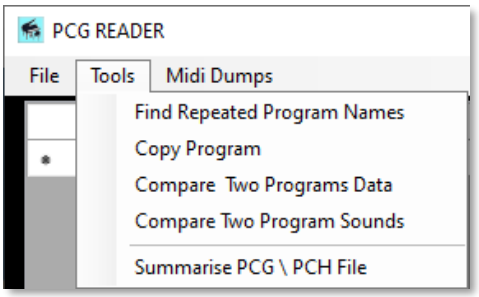
Sometimes programs may have different names, but sound the same. To compare just the sound data and ignore the names. You click on the row with the first program to compare. Then 'Copy' program. Then click on the second program to compare and then click 'Compare Two Programs Sounds'. Tip. If you edit a sound give it a new name.





Note. Once the first program is Copied, you can keep clicking a different row and then click 'Compare…'.

SUMMARIS PCG / PCH FILE CONTENTS



Once you load a PCG or PCH file you can get a summary of its contents. The first line is the file path. Then following it includes the number of PCM Programs, Combinations and Moss Programs and for each the number of Banks. Just click on the menu item 'Summarise PCG / PCH File'.

```
Summary of Currently Loaded PCG / PCH File
C:\Users\spryer\Documents\Triton PCG files\Triton PCM\PRELOAD.PCG

Number of PCM Programs = 640 In 5 Banks
Number of Combinations = 512 In 4 Banks
Number of Moss Programs = 0 In 0 Banks
```

Above is a summary of the Factory Preload PCG File.

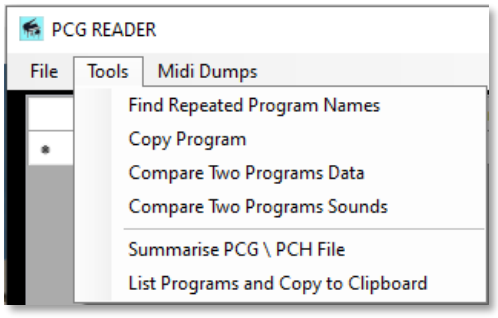
```
Summary of Currently Loaded PCG / PCH File
C:\Users\spryer\Documents\Triton PCG files\Triton PCM\PCMMasterPCH18bankswith classiclight.PCH

Number of PCM Programs = 2304 In 18 Banks
Number of Combinations = 0 In 0 Banks
Number of Moss Programs = 0 In 0 Banks
```

Above the 18 Bank PCH PCM file in the installation directory

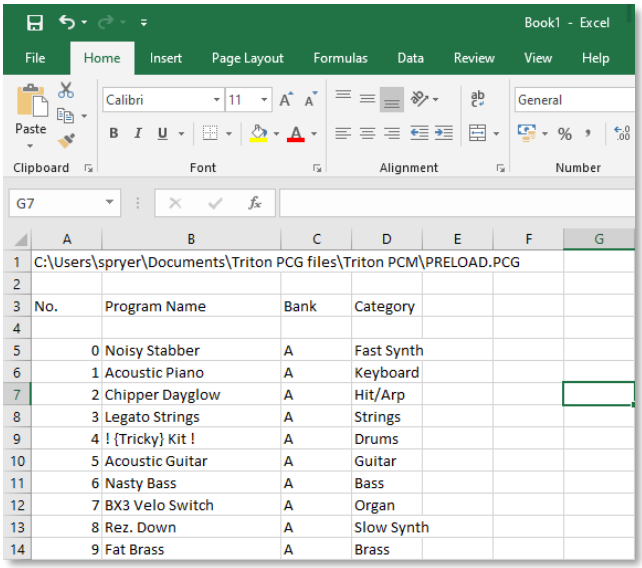
```
Summary of Currently Loaded PCG / PCH File
C:\Users\spryer\Documents\Triton PCG files\Triton_Moss\Moss9MasterPCH.PCH

Number of PCM Programs = 0 In 0 Banks
Number of Combinations = 0 In 0 Banks
Number of Moss Programs = 1152 In 9 Banks
```

Above the 9 Bank PCH Moss file in the installation directory

LIST PROGRAMS AND COPY TO CLIPBOARD

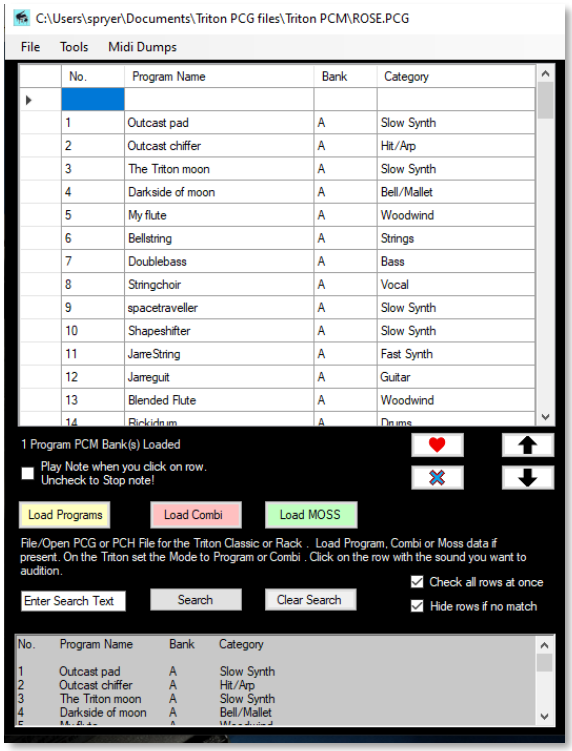


List Programs and Copy to Windows clipboard is useful if you want to import the program list into say word or excel, maybe for printing or creating a pdf etc. Just list the programs and then click this option.



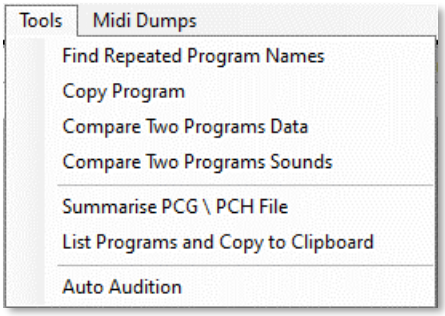
A simple 'paste' into Excel

The lower text box will also be filled with the program list and that will be copied to the windows clipboard for pasting into another application. See below.

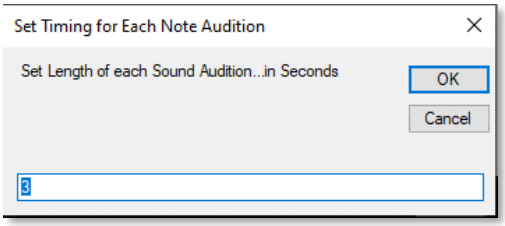


Note. If you do a 'Search'. for instance, the list will only show programs where the search string is found and the list will be shorter. The List Programs procedure will just list and copy those rows which are visible.

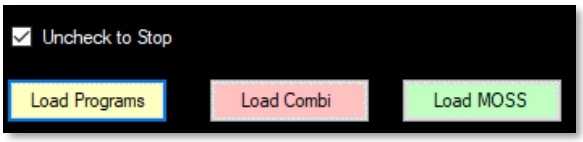
AUTO AUDITION OF SOUNDS



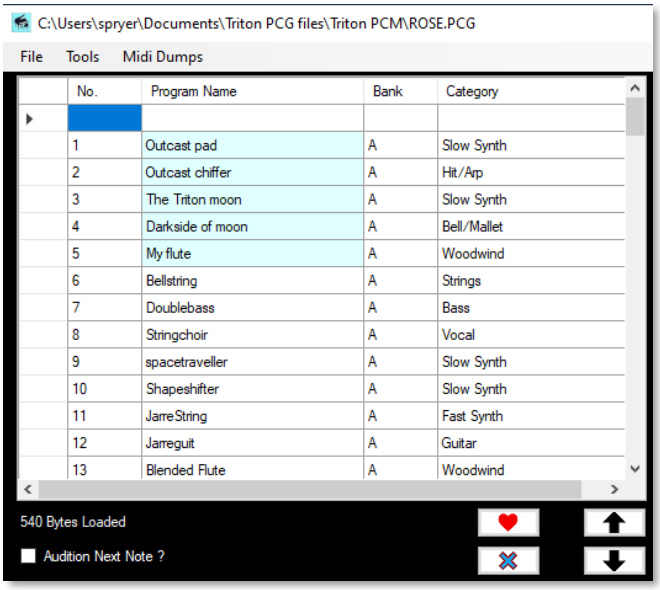
Click on a row with a Program, Combination or Moss Program and then click 'Auto Audition' on the Tools Menu. Each sound on the list will play for the length of time you specify in the input box in seconds; default 3 seconds, starting at the row you clicked on, plus the time to send the next program etc.



Release as per release envelope. Uncheck the Audition Next Note checkbox to stop.

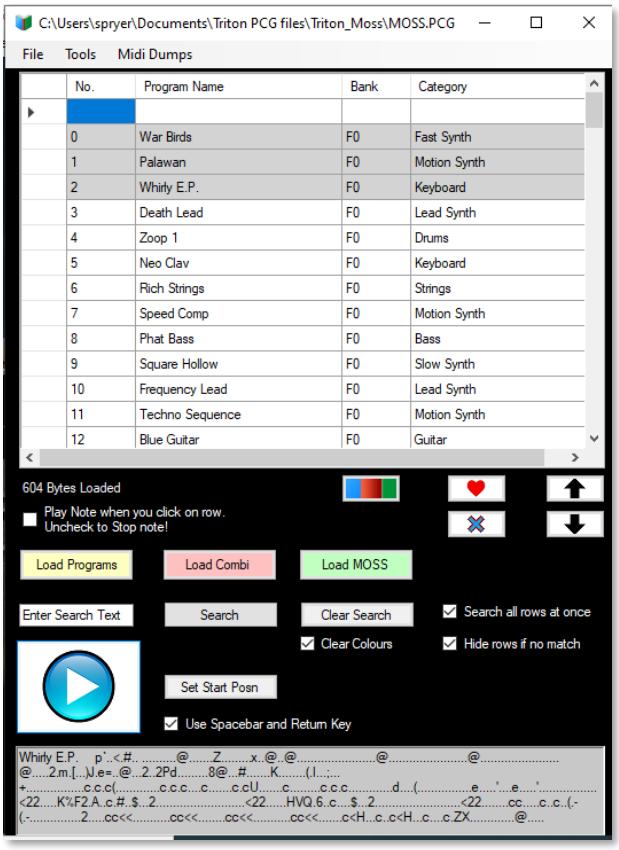


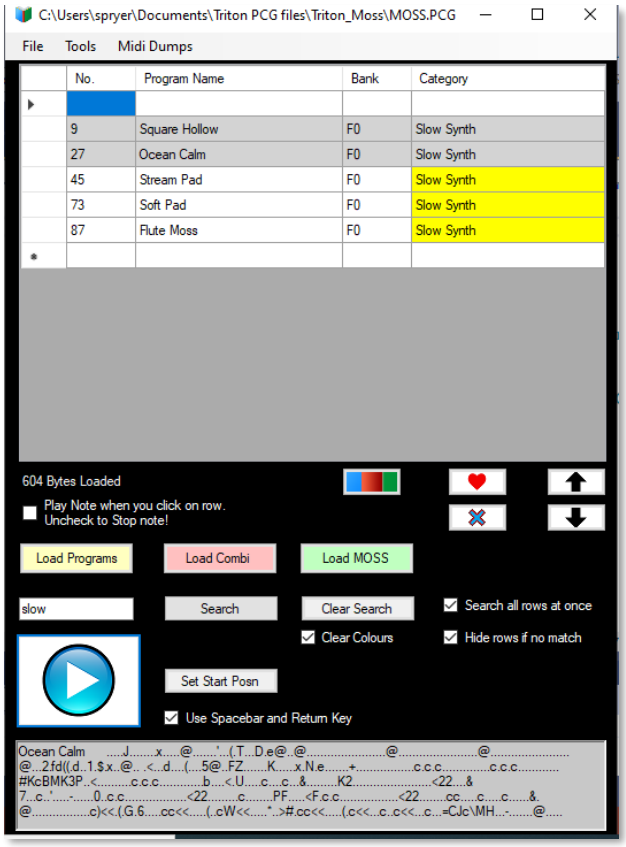
This way you can sit back, have a coffee and take note of the sounds you like!



As each sound plays the background cell colour with its name will become light blue. The Midi Note played, midi channel and volume are set on the Midi Settings form

PLAYING SOUNDS SEQUENTIALLY





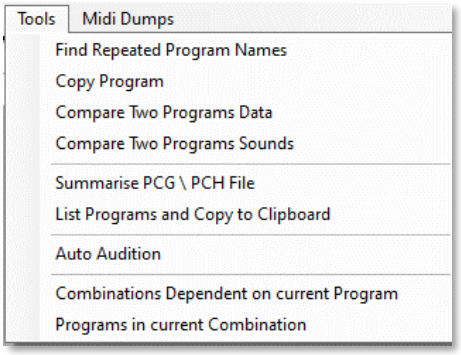
Playing sounds one after another. another

Playing sounds in a search one after another.

You can play one sound after another by clicking on the big blue play button. This is useful for selecting and finding the sounds you want. To start at any position, click on the row and click 'Set Start Posn' button. You can also use the space bar or return key if the check box 'Use space bar and return key' is checked. As each row is played it is coloured grey. To clear any colours and return to the complete list click 'Clear Search' button.

If you search by a category and as an example I've searched for 'Slow' in the top right picture. The search results will be returned in yellow with the other rows hidden. Pressing play will only play the yellow rows, the hidden rows will be skipped.

COMBINATIONS DEPENDENT ON PROGRAMS



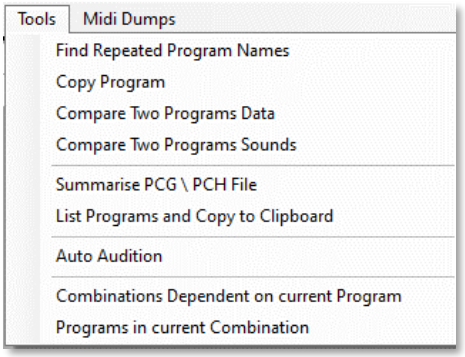
All combinations comprise of 8 programs layered together. If you delete a program the combination will be affected. To see which combinations include a program do the following:-

1. Open a PCG with combinations in it and list the programs.
2. Click on the row the program is in
3. Click on the menu item above – 'Combinations Dependent on Current Program'.

You will get a list of the combinations which include your chosen program.

Here is the list of all combinations which include the program 'Analog Strings 1 & 2' - Program A099. As you can see the list is quite long with it being used 5 times in Bank A Combi 0 = Romance Layers. Scroll down to see many more! So if you delete this program all these combinations will be affected!

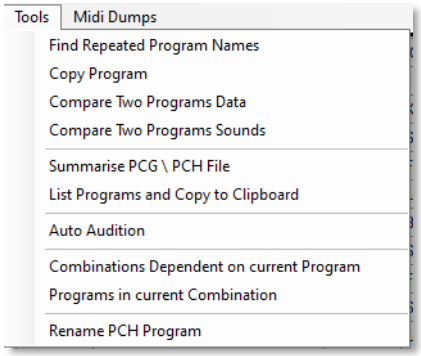
PROGRAMS IN CURRENT COMBINATION



If you load a combination and then select 'Programs in current Combination, it will list the 8 timbres (programs) which make up the combination.

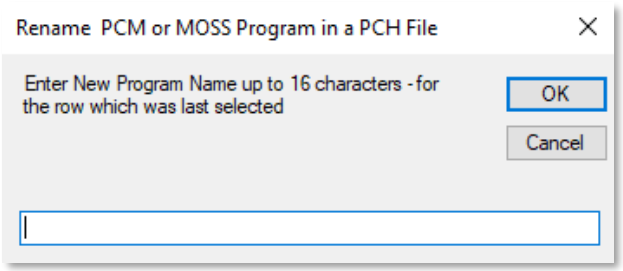
In this example I have chosen / clicked on a combination called '!! MOSSPOWER !!' I've then clicked on select 'Programs in current Combination'. A summary of the 8 timbres (programs) are listed in the bottom viewer. The list is also in the Windows clipboard for exporting to say Word or Excel.

CHANGE THE NAME OF A PCH PCM OR MOSS PROGRAM



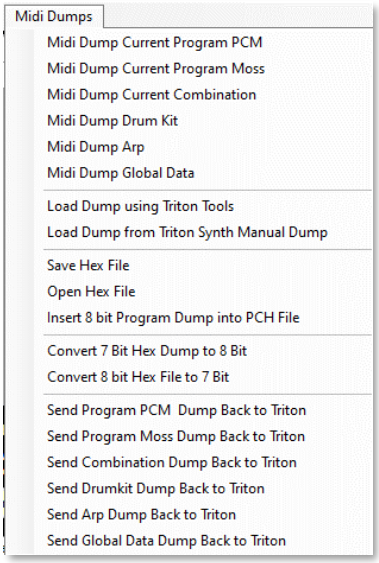
You can change the name of a PCM or Moss program in a PCH file.

1. Just click on the row you where you want to rename the program.
2. Then choose the 'Rename PCH Program' menu item.
3. In the text box which appears, give it a name up to 16 characters long and click 'OK'. Unused characters will be filled with spaces. If you enter over 16 characters then the name will truncate to 16 characters. If you enter nothing "" or if you click 'Cancel' then nothing will change.



You can the 'Save the PCH File' in the File Menu to a new name once you have finished.

REQUESTING MIDI DUMPS



You can use this software on Windows to request midi data dumps from the Triton. Selecting 'Midi Dump Current Program PCM' to 'Midi Dump Global data', which will force the Triton to dump the 7-bit data for the currently selected item.

Once you request the Midi dump for the current item you click on 'Load Dump using Triton Tools'. This loads up the sysex data retrieved from the Triton in the PC's midi buffer and to the windows clipboard for copying to the Triton Controller if needed. If you use the Triton synths screen to initiate the dump - Global Mode Midi / individual program dump menu option etc you need to use the 'Load Dump using Triton Manual Dump' option as the header when received is 6 bytes longer.

- You can 'Save Hex File.' This saves 7-bit midi dump as a plain text file (*.txt). You will be asked for the Data Type.

- Then you can then reload it at a later date buy using 'Open Hex File' (*.txt) and 'Send Program PCM, Send Program Moss..' or Send Combination..' dump back to the Triton as a 7-bit hex file.

Name your hex files so you know if they are Program PCM, Program Moss or Combinations etc. and whether they are 7 or 8 bit.

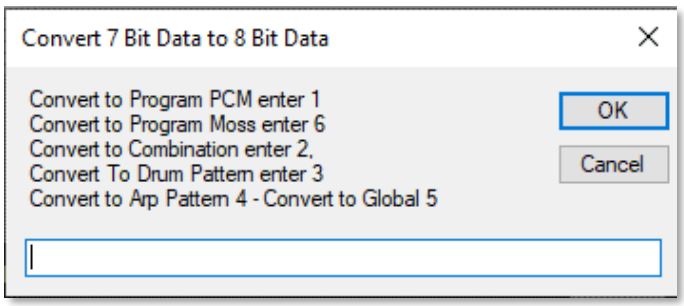
Note. If you download and reload global data you do so at your own risk! Global data affects the whole synth and if anything goes wrong it can only be reloaded using the factory install disks.

SENDING BACK MIDI DUMPS

Once you have the Midi Dumps you can resend them back to the Triton as 7 bit data. In this way Triton Tools acts as a Midi Filer. A great way to share single programs with other users and a way of storing settings on your PC. Just Click 'Send Program PCM Dump back to Triton' or 'Send Program Moss Dump back to Triton' etc…

For details on how to use 7-Bit data in conjunction with my other software, The Triton Controller see next section on 'Importing Midi Dumps from the Korg Triton'. For instance, using the Triton Controller you can download programs and then insert them into PCG files on your PC. It's especially useful if your floppy disk drive or screen does not work!

I've included procedures for converting 7-bit data to 8-bit and back to 7-bit data. This is needed if you want to edit PCG files which are 8-bit, but need converting back to 7-bit for sending to the Triton. See next section on Korgs' data format. When you use these conversions you will be asked for the data type of the item you have loaded. Just enter a value of 1 to 6. See below.



Note that data in the PCG file is 8 bit data. But Midi Dump send or receive needs to be 7 bit. But I have included conversion options going each way.

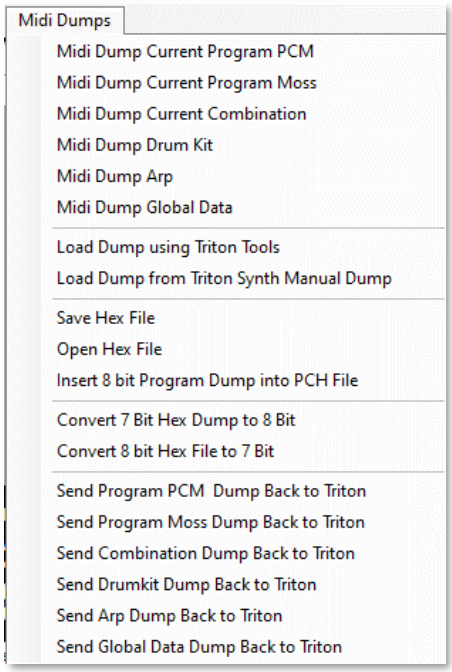
MIDI DUMPS AND PCH FILES

PCH file contain hundreds of programs so if you have programs (PCM or Moss on your triton you can dump them and then put into one of my PCH files in the installation directory. If you have downloaded a midi dump it will be in 7-bit format. If you convert it to 8-bit format using the 'Convert 7 Bit Hex Dump to 8 Bit' option you can then insert it into a PCH file.

Firstly open one of my PCH files, either a PCM PCH file or Moss PCH file as appropriate for the file type you dumped . Click on the row you want to insert your 8-bit midi dump.

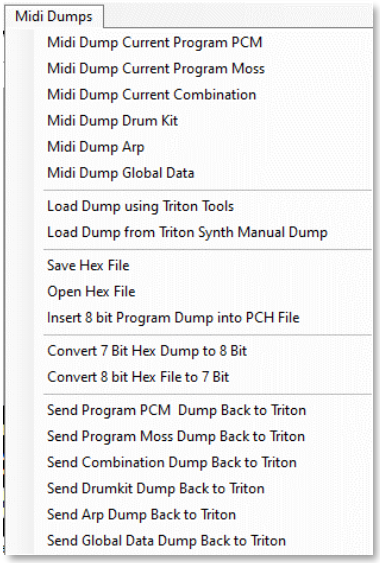
Select 'Insert 8-bit Program into PCH File'. It will insert the 8-bit dump in place of what was in the row you clicked previously.

Then when done inserting you dump files you can 'Save PCH file' in the File Menu and give the PCH file a new name.



MIDI DUMPS & PCG FILES

To insert a dump into a pcg file you need the Triton Controller Software. As described above, you can instruct the Korg Triton to dump individual program data, Moss data, combi data, Drum data and Arp data to a data filer such as this app. This is particularly useful if your Triton disk drive is not working or maybe your screen is not working? You can then save the data as a text file and insert in a PCG in the Triton Controller software for future use. No need to use floppy disks or other media!



1. The midi input/output on Triton Tools needs to be set to the 'Triton' to collect the midi data and to send dump requests.
2. Then select the appropriate Midi Dump drop-down menu on the Triton Tools form. Note when a dump is requested it takes under a second to download the dump for a single program. The length data received will be shown in the bottom left textbox of the midi settings form.
3. Click on Load Dump using Triton Tools, which copies the 7-bit dump in hex to the bottom text window and also to the Windows clipboard.
4. You can also save the 7-bit dump to a file 'Save Hex File.

To import into the Triton controller

If you have the Triton Controller software you can then import the dump to insert into a PCG file if you want.

1. In PCG Reader – edit/clear text – this empties the file viewer box
2. Edit/paste – this copies the hex midi dump from the Windows clipboard to the File viewer window. Or open the 7-bit file you saved in Triton Tools.
3. Use the 'convert midi dump to 8-bit button' on the Triton Controller software. See image below.

Now the data is in the same format as the PCG file format. 8 Bit. You can now insert the data into a pcg file etc.

KORG'S DATA FORMAT

Behind the scenes stuff!

If the midi data which is being sent or received by the synth is larger than 7 bits long (> F7 or > 127 decimal) it needs converting. This only applies when you are sending bigger chunks of data, not individual settings for a control which is normally less than 8 bits.

Korg Synths' such as the Triton, Oasys, Kronos and Nautilus store internal data as 7 bits, which is historical and based upon 7-bit midi data transmission. If you dump a whole Program or Combination from the synth by sysex it will need converting to 8 bits when editing individual values on the computer. Then converting back to 7 bits when sent back to the synth. However, I have created conversion routines which can do this automatically. This would apply when dumping a program or combination and writing back to the synth for instance. PCG files store data as 8-Bit binary but need converting to 7-Bit when sent to the Synth.

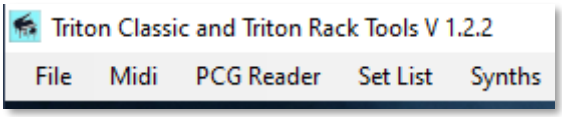
Other Manufacturers such as Roland store data as 8-Bit internally but they have the added complication of a Checksum. But I have written automated routines for that too.

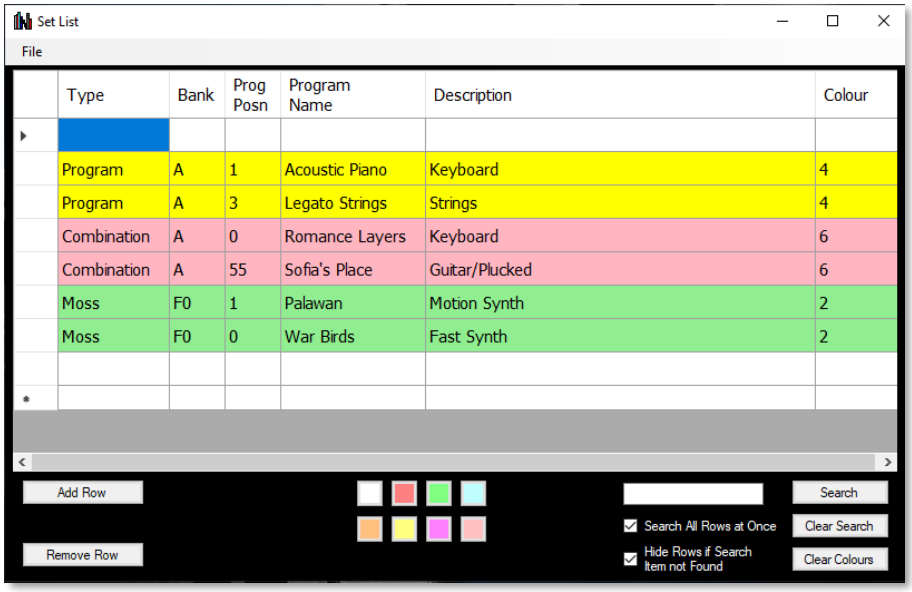
Note that for instance a Korg Moss program is 604 bytes long.

This does not apply to the Midi Mapper as data < 7-Bit in size.

SET LISTS

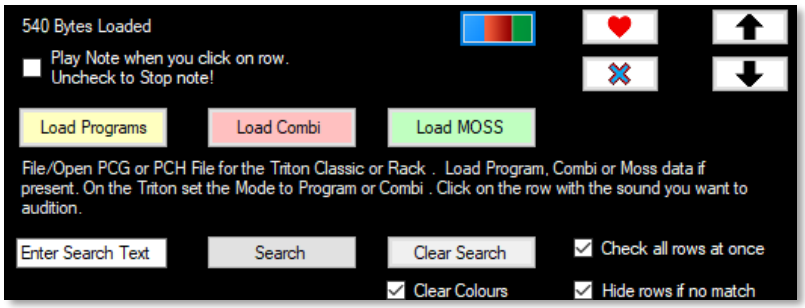
Many performers' use set lists so their sounds come up in the order they want. The Triton did not come with a Set List facility so I've added it to this software. Once you organised a setlist it's easy to play the Set List on the Triton, as each Program, Combination and Moss Program is just transferred to the Tritons Buffer by Midi and does not rely on the sounds being in the onboard program/combi/moss banks.



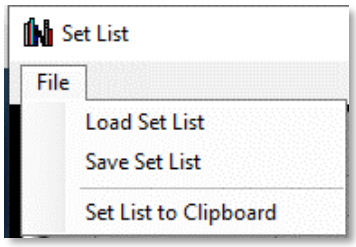


A Set List enable you to organise the sequence in which you play sounds. You can have a nearly unlimited number of sounds in a Set List. Above is the Factory Moss PCG with a selection of Programs, Combinations and Moss sounds. This PCG is in the installation directory. You add sounds to your setlist by clicking on the sound row in the PCG reader and then clicking the set list button below.

The setlist which you create will be associated with the PCG/PCH file you are using and will have a .set file extension. Name your setlist so it relates to the PCG file it uses, as the two files work with each other.

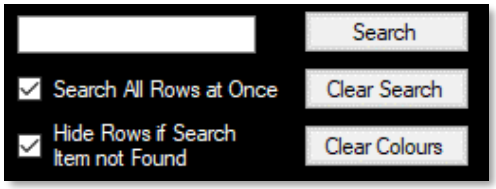


When you click on a row of the PCG reader and then click on the set list button, a new row will be transferred to the Set List. Once you have created your set list, you can colour code it. Click on a row and then on a coloured button on the Set List Form. Clicking on a set list row sends the sound by midi to the Triton. You can overwrite or add to the description column any written notes you want.



Remember to save your set list and give it a name which links to its PCG file. You can then open the PCG file and the set list at a later date. You can remove rows from the set list and add rows. Set Lists work for any mixture of Programs PCM, Combinations and Moss in the same pcg file. 'Set List to clipboard' generates a copy of the list for copying to other apps such as Word or Excel.

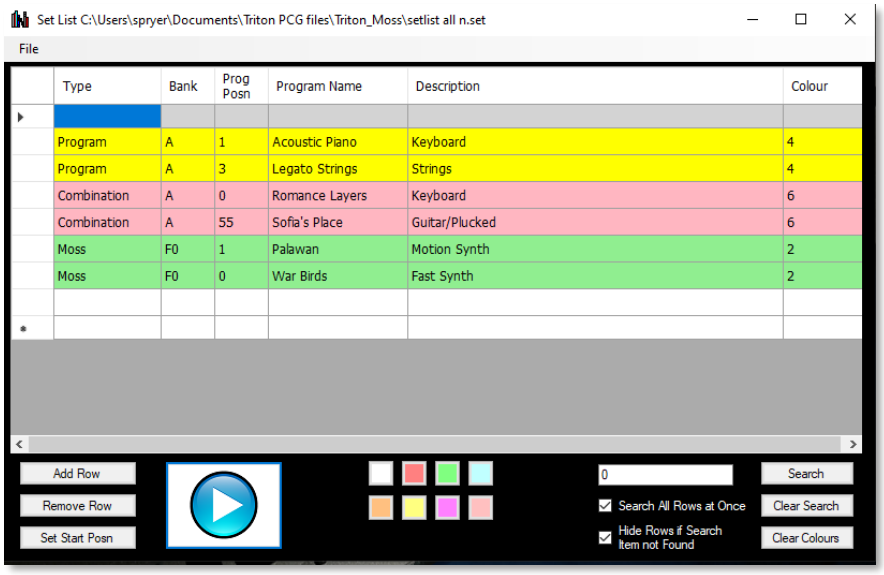
Note. Setlists use the character £ (pounds sterling symbol) to separate items in the setlist files, so don't use this character in the names of your programs. I found that none of the PCG/PCH files I have use a £ in program names.



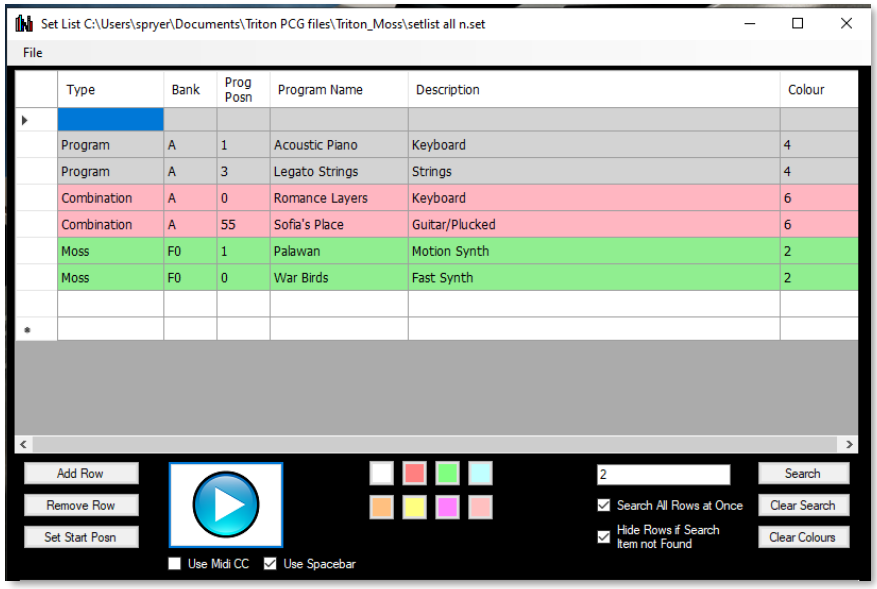
You can search for text in the set list. Type the search item in the white text box then Click search. Checking 'Search All rows at Once' avoids clicking on search after each instance found. You can hide rows where the search item is not found too. Clear search returns the filtered set list to the complete list. 'Clear Colours' removes any coloured rows.

PLAYING SETLISTS

Instead of clicking on the next row with a mouse. Click on row before the one you want to start on and then click 'Set Start Posn' button. Then just click on the big blue play button, which will advance the sound once every click. The row will then go grey.



Above. Ready to advance to the first set list sound – Acoustic Piano.

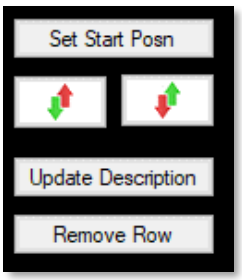


After 2 sounds / clicks of the blue play button the next sound about to play is 'Romance Layers' which is a Combination.

You can also advance the set list item once the first item is selected by the Play button by pressing the RETURN KEY. You can also use the SPACE BAR on the PC if the 'Use Spacebar' checkbox is checked - as above.

EDITING SET LISTS

You can move the current row up or the current row down by using the red and green, Up or Down arrow buttons. Each click moves it one further position up or down. This is useful for reorganising your set list.



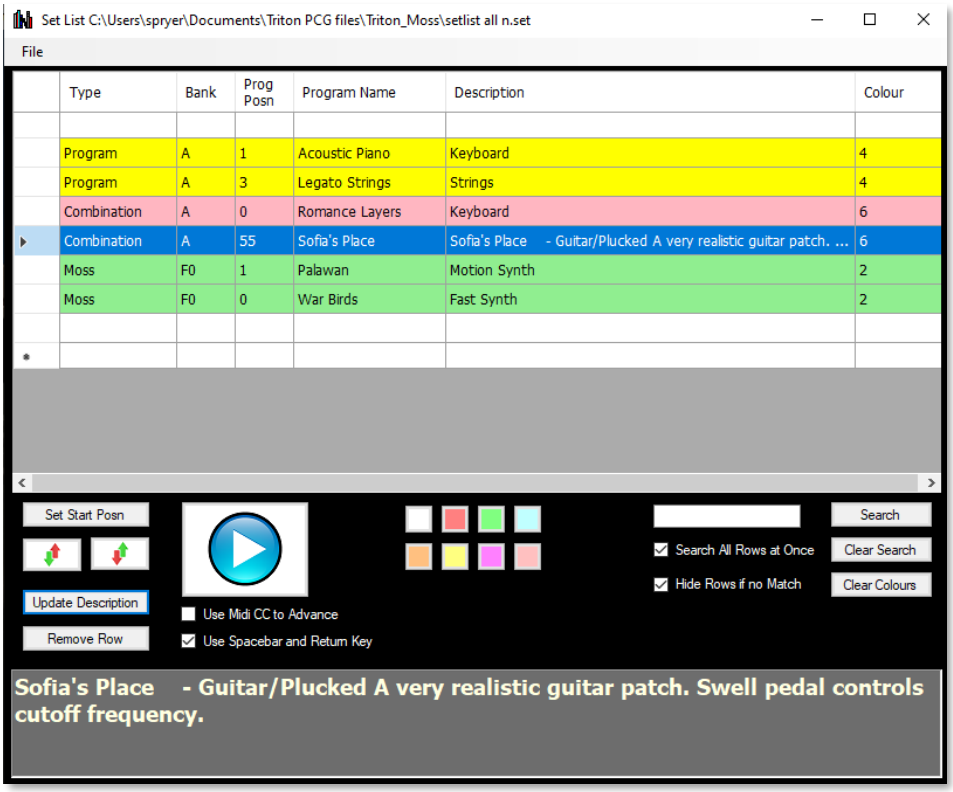
To add a row with another sound, you just transfer the sound from the PCG reader to the first empty row at the bottom and a new row will be added. Or you can click on a used row and overwrite it.

To remove a row, click on the row and then click 'Remove Row'

ADDING SET LIST DESCRIPTIONS

You can update the description of the sound. Just click on the row you want to update which will transfer the current name and description, (normally the sound category), which are automatically added, to the lower grey text box.

You can the type as much text as you want in this text box. See below. 'Sofias Place – Guitar/Plucked' description is being added to.



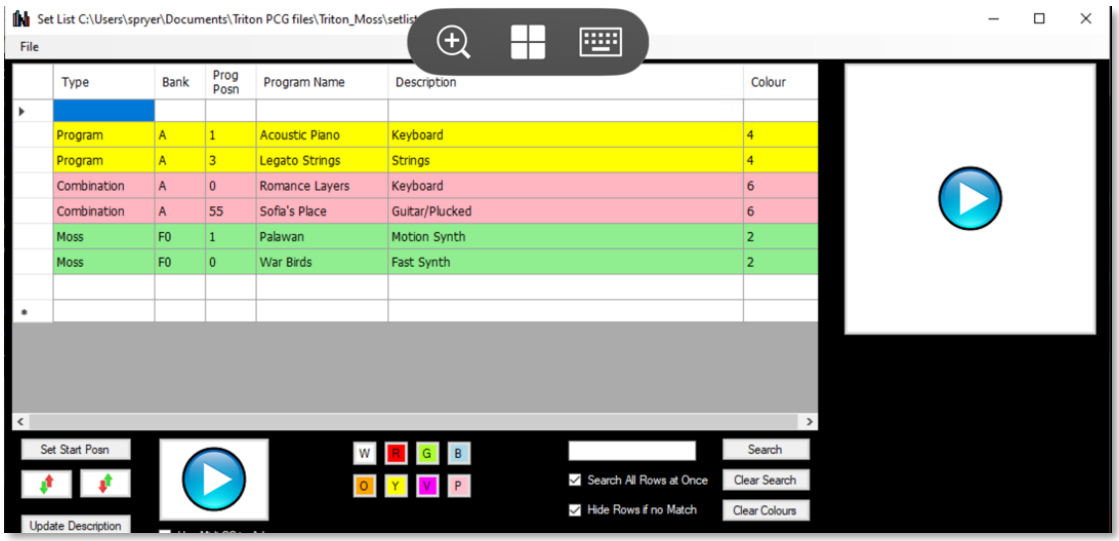
When done, click on 'Update Description' button. This will transfer the new text in the bottom text box back to the Set List. The blue selected row will have its description updated. It will be saved when you do file/save. See below.

Notes.

1. You won't be allowed to copy from the first row of the pcg reader as its blank and reserved.
2. You won't be allowed to copy to the first row of the set list. It is reserved.
3. You can copy to a filled row of the setlist which will overwrite the existing entry.
4. You can write to the first bottom blank row of the setlist which will add a row for the new entry.
5. You can move entry's up and down the list and delete rows.
6. The first row and the last two rows of the set list should always be empty.
7. When you load a set list you can carry on editing it.
8. When you save your setlist give it a name associated with the PCG it relates to. The file extension of a set list is ".set". It's a plain text file.

USING SETLISTS WITH A MOBILE PHONE OR IPAD

If you use the 'Windows' remote app on your iPhone, android phone or iPad etc. you can use setlist running on a remote PC. If you drag out the right-hand side of the setlist window or maximise the window you will see a large duplicate of the play advance button to make advancing programs easier with a mobile device.

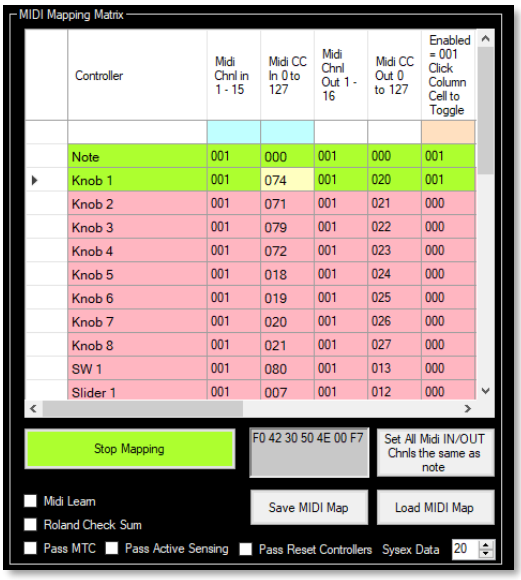


Screen shot from an iPhone showing the Setlist form.

ADVANCING THE SET LIST USING INCOMING MIDI

If you connect any midi device which transmits midi cc messages or note messages, you can use it to advance the set list. Eg the Triton, a Midi switch, a Midi controller, or a Korg Nanopad for instance.

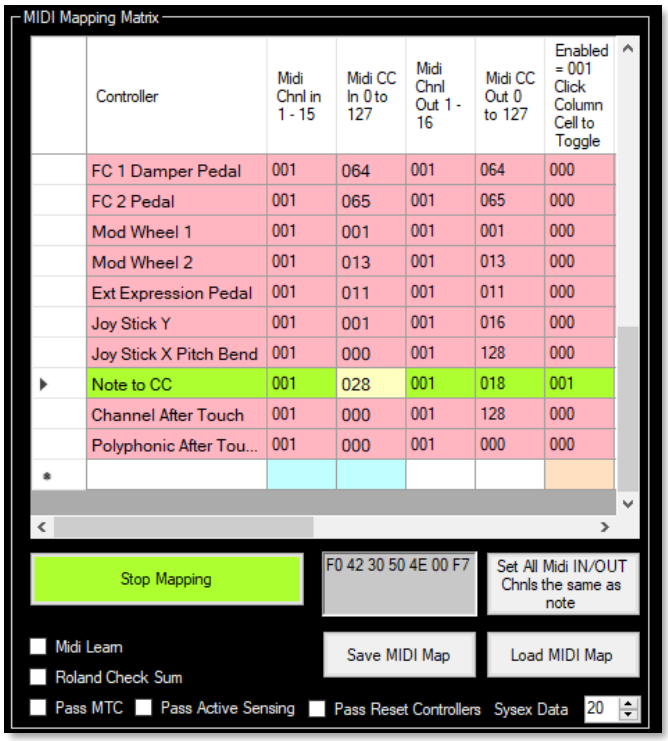
1. Determine the midi CC value the controller switch is sending by using the Midi settings midi in form/window. Eg say CC 74. It needs to send just 1 CC message of a specified number per click. Not multiple. So Bn 074 say or Bn 074 & Bn 075 would work. But not Bn 075 & Bn 075 at once as his would advance by two rows.
2. Goto the midi settings form – Mapping Matrix. Set the 'Midi CC 0 to 127 column' to the controller number – eg. 074 below in white cell. On the row called Knob 1 - which is a CC row. Make sure the row is green (enabled) by clicking on it.
3. Set Midi in port of this software to the incoming device Eg. 'your midi switch device'. Set midi out to the Triton. Press 'Start Mapping.
4. Make sure the 'Use Midi CC' check box under the Blue Play button is checked on the set list form.



Now when midi control change CC 074 midi message comes into the software the set list row will advance by 1. The mapping matrix is described in detail later.

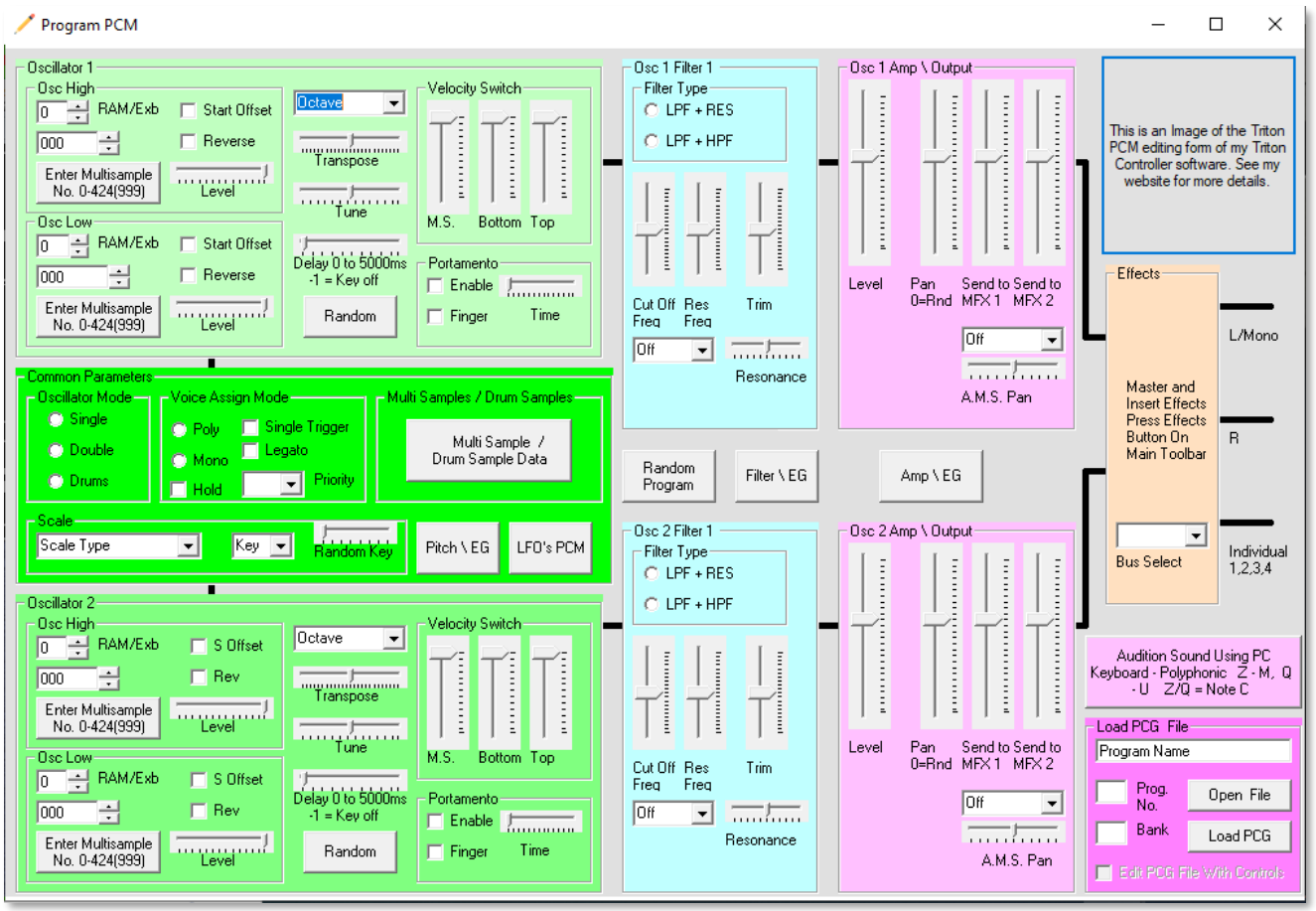
If you want to use the Triton to advance the set list, then for instance either a footswitch connected to the Triton or the left-hand switch above the joystick both transmit CC80 by default with each click. To use these just set 080 in the mapping matrix instead of 074.

Although using Midi CCs' is recommended, you can map a note on the Triton to a CC value. The lowest note on the keyboard A0 midi note 021 on the ProX or on the Pro 028. Use the Midi matrix Note to CC row and set Midi CC in to A0 midi note 021 or Note E1 Midi note 028. Start mapping. When you play the note softly, or any midi note you define, it will use it to advance the setlist. Note the matrix filters out note off messages so you don't get two note messages sent when you press and release a key. It only responds to note on. Press the note gently as the note will sound the Triton.



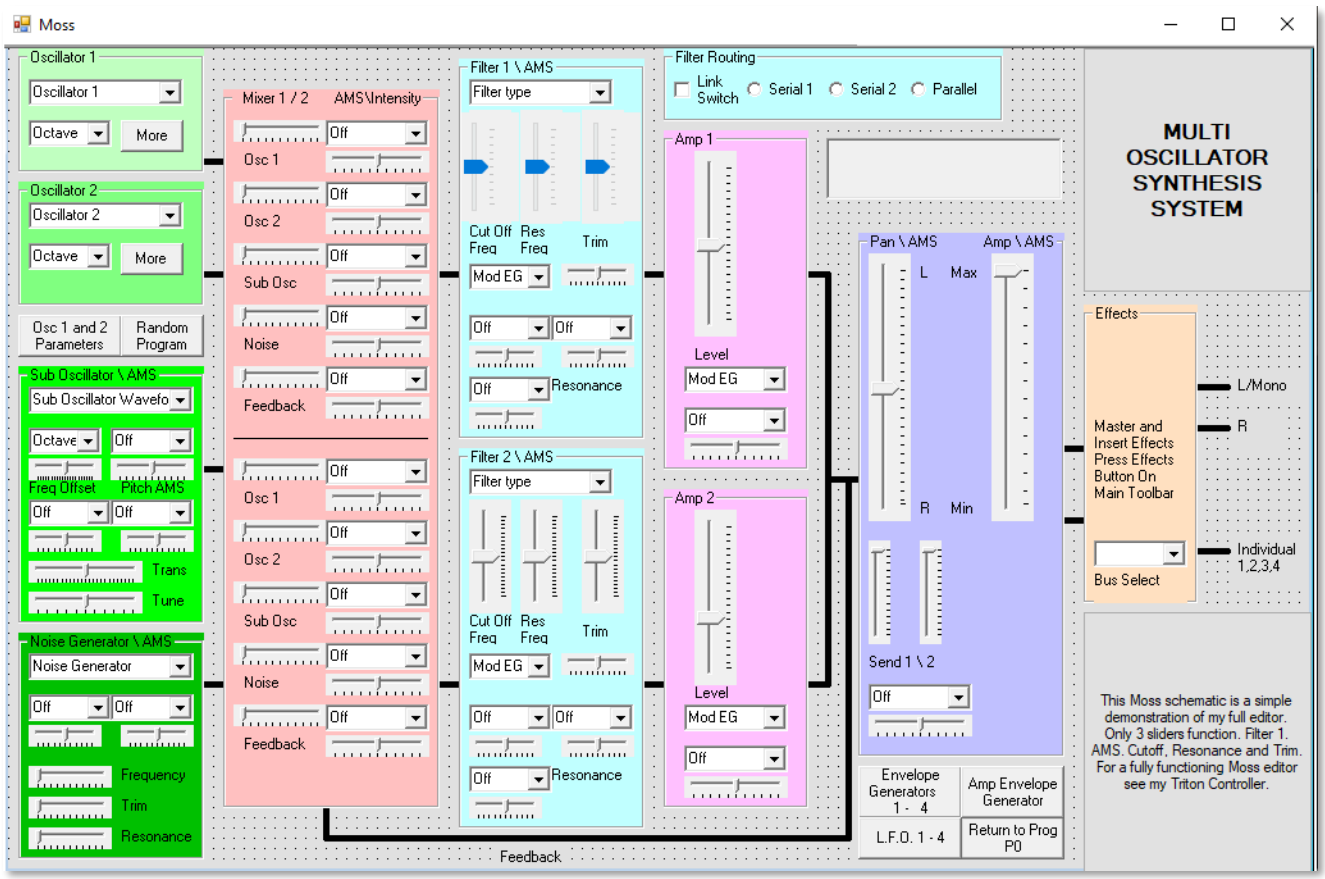
Above. On the Triton Pro set Note to CC/In to 028, enable the row by clicking on it so its green. Press Start mapping. The software only sends a set list advance command when it detects midi note 028 (note on) arriving at its midi in. Play note 028 softly (but > 0) as it also transmits a note to the triton sound engine.

PROGRAM PCM



This form is just an image of my Triton Controller PCM editing form which shows just some of the editing functions. It's for illustrative purposes. See my website for details of the Triton Controller software.

MOSS - MULTI OSCILLATOR SYNTHESIS SYSTEM



The Moss Expansion board is a physical modelling synthesizer. Stanford University did a lot of research into modelling real instruments and patented their ideas. Under license, Korg developed modelling for the expensive Oasys PCI card, the Prophesy in 1995, followed by the, Z1, Trinity and Triton in 1999. Later incarnations were used for the Oasys's plucked string model. The original Prophesy was monophonic, but the Z1 had 6\12 notes polyphony and the Triton 6 notes. The closest you can get to the Moss board today is Korg's Prophesy VST and this can operate polyphonically with up to 256 notes. It contains 5 of the 7 Moss oscillator types except the Organ and ePiano types. It really is a steal!

Whilst the Tritons Moss expansion board was an expensive optional extra, it provided a completely different synth engine to the Hi Sys sampled engine built into every Triton. If you click on the Program/Moss top menu item you will see the Moss schematic from my Triton Controller which includes a full Moss Editor. This gives an idea what it can do. **On this demonstration form, only three siders work. Filter 1 \ AMS -> Cutoff frequency, Resonance and Trim.**

I wrote the Triton Controller software as I felt the interface on the Triton could be made more intuitive and be laid out in a more orderly way – like older analogue synths such as the Korg MS10/20 & Mini-Moog. Their sound creation process was done in a 'linear fashion' on the control panel. This is particularly beneficial for Program editing for PCM and the Moss board (Bank F if fitted), which inherit the principals of earlier synths – plus much more! I found the small screen of the Triton does not provide a particularly clear layout of the controls, with many of the features hidden behind multiple windows.

The Moss Board is the second synth of the Triton and contains 13 different instrument models. which works alongside the Tritons sample-based approach. *See the Korg's Moss in the Help menu.*

You need to have the optional Moss EXB expansion board installed to use this feature. On the Triton Controller you can edit ALL MOSS Parameters! Oscillators 1 & 2, Noise Generator and Sub Oscillator. Filters, Amplifiers and Output have complete coverage. The Oscillators are at the Left. Firstly, choose the type from the drop-down list. This is where you normally start. The 'More' Buttons give access to ALL of the individual Moss model parameters. This editor gives you complete control of ALL Moss Oscillator Types and parameters.

MOSS is very popular with Eastern European and Middle East musicians as it is excellent for modelling ethnic instruments.

NB. The program overcomes the major bug in the Moss implementation of 'reed model' in earlier triton O.S.'s - You can choose different types of model when you control the Triton from its panel: pan flute, hard sax, soft sax etc... but their specific sound characteristics only seem to be applied after you write the program into memory (on the Triton's F bank). This does not occur when you use this program and it works as it should!

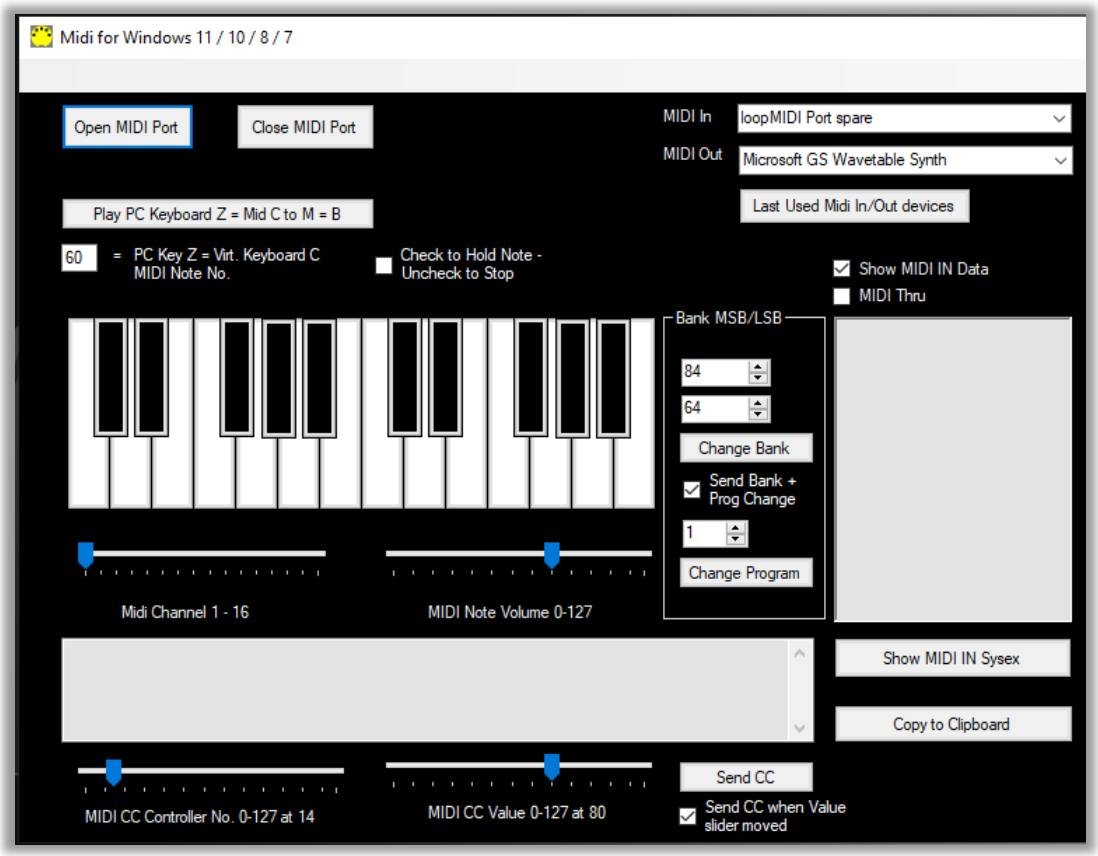
For those people without a MOSS expansion board in their Triton, here is Korgs brilliant Prophecy VST. Whilst the 1995 original was monophonic, this is polyphonic, with up to 256 notes! It as close to a MOSS board or a Prophecy you can get at the moment, unless you buy second hand hardware. Connect to a midi controller with 61 keys or more for incredible sounds! NB. You change the polyphony in the fx section. Took me 10 minutes to find it! It also supports Prophecy .syx files which you can import for even more sounds! Use with controllers such as Nanopad and Nanokontrol for you control surface. The 'log' at the bottom left can be controlled by the x-y pad on the Nanopad for instance.

SENDING MIDI DATA

SENDING NOTE DATA

To send note data from this software, set up your Midi In / Out ports and open the Midi Port. It will turn green. Make sure you set the Midi Channel slider to the channel you are using. 1 by default.

When you use the Triton with another Instrument or VST you will probably want to Map the controller Midi CC's to the external instruments controls CCs. It's often easier to just do this once and save the settings for each setup. This software contains a versatile Midi Mapper. You can save a Midi configuration on your PC rather than set it up each time.



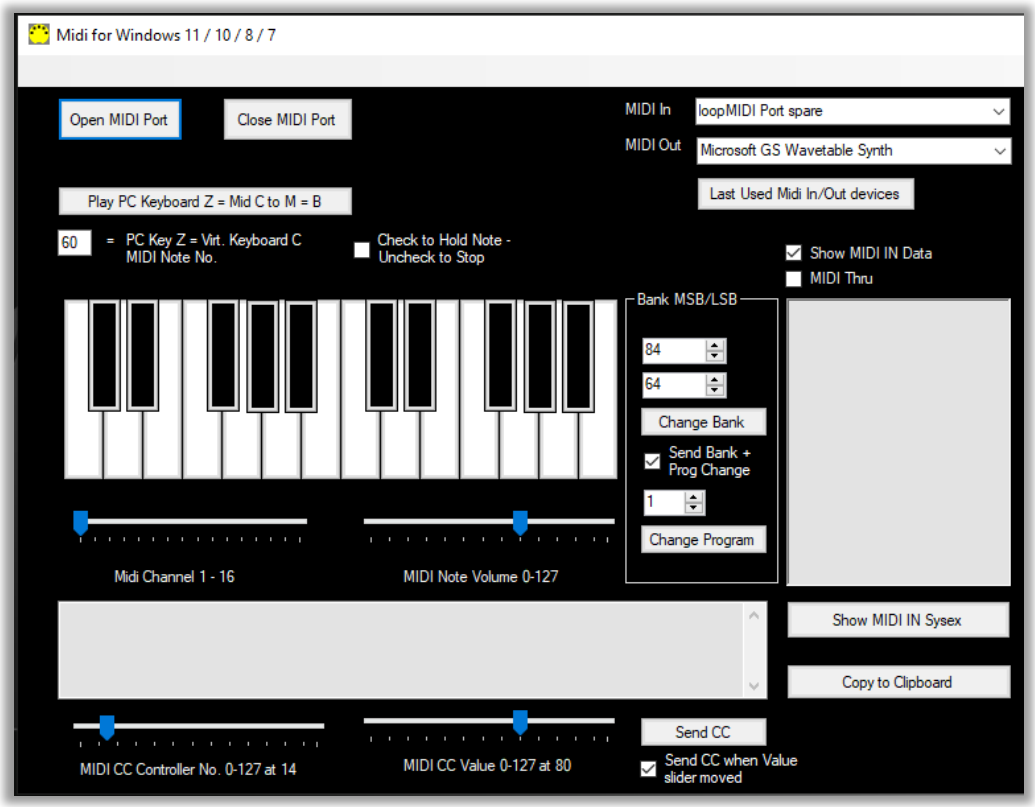
The Midi Settings Form.

The MIDI form has a nifty virtual keyboard for remotely playing the Midi software or device whilst you edit the sounds on the PC. The keyboard has a range of 2 octaves.

If you want to play the Midi software or device using the PC keyboard – press the 'Play PC Keyboard Z=….' Button on the midi settings form just before playing. You must press the 'PC keyboard' button every time - immediately before you use the PC keyboard to play the Midi software or device. PC Key z = Note C. s = note C#. x = note D. etc. The notes run from z s x d c v g b h n j m. Which map to C, C#, D, D# etc. The 'PC Keyboard' is polyphonic, so you can play chords. By the way the polyphony depends on your PC. My very old Pentium 2 - 400mhz could play 4 notes at once. My ancient laptop only two notes at once. Depends on their keyboard buffer.

The pitch of note Z can be set using PC Key Z or Virtual Keyboard C = Midi Note text box at the top left of the form. This facility to play from the PC keyboard has been added to enable the user to audition sounds whilst editing.

SENDING MIDI CONTROL CHANGE MESSAGES CC



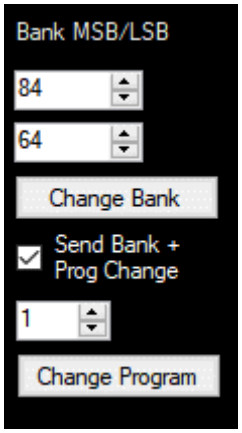
If you want to send Midi CC Control Change to the Triton then select the controller number 0 to 127 using the left-hand slider and the controller's value right hand slider at the bottom of the form.

Data is sent immediately if the 'Send CC when Value Slider is moved' check box is checked and the right-hand slider is moved. If unchecked press the Send CC button. See Kronos and Triton midi implementation manual for CC the messages the Triton responds to.

Note. Some CC controller numbers require two Midi CCs to be sent in quick succession – eg Bank Change – this has its own section on the form. These require a separate MSB/LSB as the number of values available is over 127.

SENDING PROGRAM / BANK CHANGE

You can change the MIDI Bank and Program on midi instrument using MIDI. Note. The Triton uses a MSB and LSB bank address. There are 128x128 banks available in the midi spec. and 128 programs.



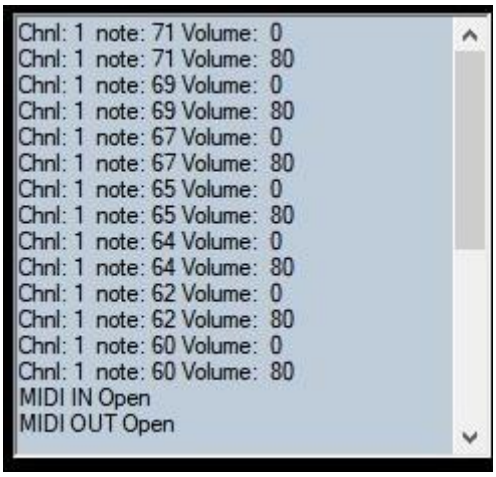
Set the programme number 1 to 128 and press button "Change Program". The Bank MSB and LSB default are set for the Kronos or Triton for Banks starting at 01.

There are 128 x 128 = 16384 banks available in midi, with each one containing 128 programs. To try it on another midi instrument. Set Program to say 02 and click 'Change Bank'. Normally instruments need the program change message sent immediately after for this to work, so leave the check box ticked. See later how to change Tones, Rhythms and Program banks on the synth.

Note that if you set the MIDI channel to "10", Bank 1, you will get the General Midi percussion instruments with each key sounding a different percussion instrument. There is no change if you vary the MIDI instrument number. If Bank 1 is set to 01 then you will get the General Midi instruments in the synth.

RECEIVING NOTE DATA MIDI MESSAGES

Note data is a MIDI a Channel Voice Message and is sent whenever a midi instrument is being played.



In the example above I opened the midi port and sent a series of 7 notes to the app and they appeared like this. The list shows the Midi Channel (1 to 16), note number which will lie between 0 to 127. In this case 60 to 71 each with a volume of 80. (Volume range 0 to 127). With every note in this example there is a following note off message. Volume 0. The last note is at the top of the list with the oldest at the bottom.

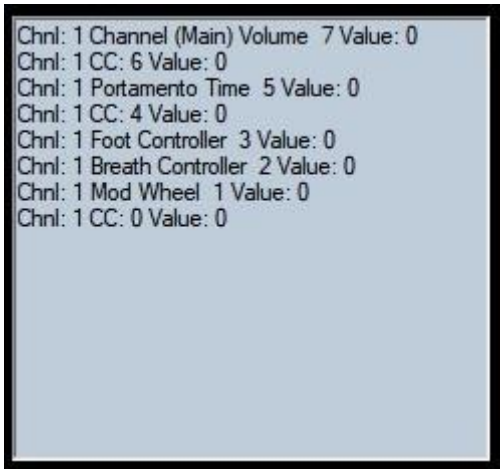
RECEIVING CONTROL CHANGE CC MIDI MESSAGES

Data shown on the Main text box can be filtered by the check box 'Show Midi Data' as to whether to show Notes and CC messages as they arrive. Newest data at the top of the list. Notes, Sysex and CC data is only passed through from the Midi input to the output port of the app if midi thru is checked.

CC data takes the form for example - Bank change

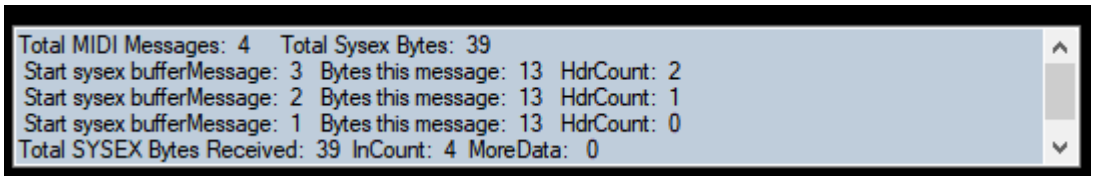
Bn (data1) (data 2),
B in Hex is 176 in decimal (if n=0) to specify CC type message. n is the Midi Channel.

The Control Change CC data has the most common values described by text. See below where I have sent a series of CC messages to the app. Chnl is the MIDI channel the CC message is being sent to. Undefined CC messages just show CC. Defined ones such as 'Mod Wheel' = CC 1, Value 0.



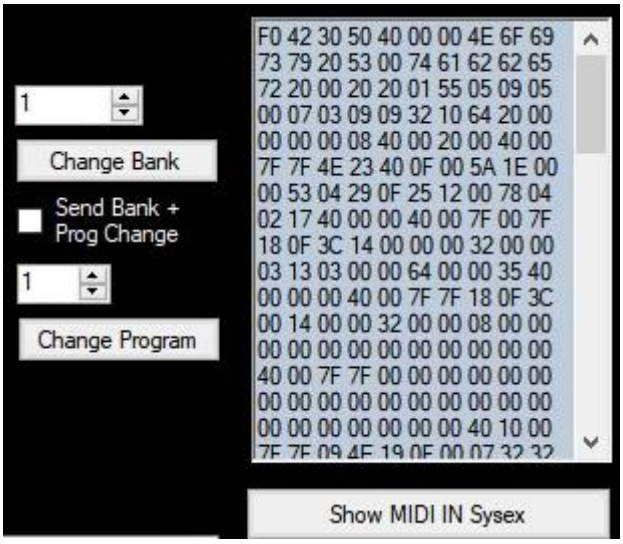
RECEIVING SYSEX MIDI MESSAGES

To receive a midi data dump from an instrument, set the instruments midi out to the midi in of the app. Instruct the instrument or software (This is done on the Load buttons in Vpiano for instance) to start the dump. Incoming data will be displayed as it comes in together with Sysex data. When the midi sysex dump is complete (F7 at end of sysex data), the bottom text box will report 'Start Sysex Buffer Message'. Together with its sysex message number in list starting at 1 and its size in bytes. HdrCount is message number – 1. See below.



You can then display Sysex data received in the main textbox by clicking the 'Show MIDI IN Sysex button. Note the bottom text box shows the total number of midi messages received by the software. In the image above 4 messages were received in total, of which 3 were Sysex. The latest Sysex message is at the top of the list and can be displayed.

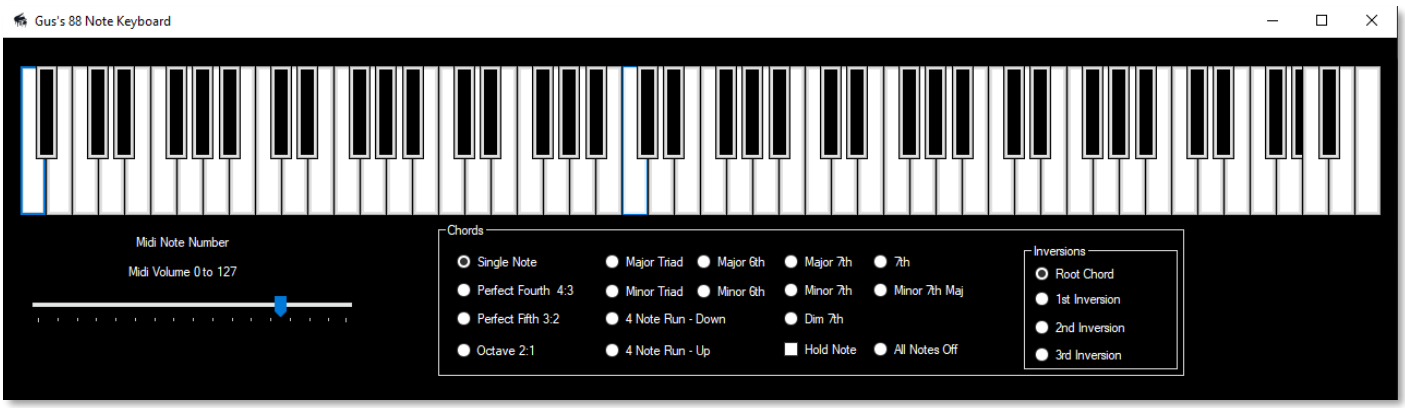
Tip. Sysex is only shown if the Show MIDI IN Sysex button is pressed to display it after a dump is complete. See below.



The entire main text box can be 'copied to the windows clipboard'. 'Copy to clipboard' button. This includes the complete dump sysex data.

The ‘Midi Through’ checkbox allows data to pass from the midi in port to the midi out port of this app. If unchecked it won’t pass through. Note if midi thru is enabled in the software and your device you will get a midi loop and crash the app. Midi thru is if you are generating midi from another app and monitoring it before forwarding it with this app to another device.

88 NOTE KEYBOARD



The 88 Note Keyboard is dedicated to Gus at Roland Clan Forums for his fantastic efforts and hard work in testing my RD2000 program.

The keyboard is useful when designing sounds as you can hear the entire range of the standard instrument keyboard. First set Midi ports and input/output on the Midi form.

The Midi volume is controlled by the slider on the form. The midi channel is set on the Midi settings form.

You can play single notes, hold notes (for creating chords with the mouse) until 'all notes off' selected, play 4 note runs and perfect 4^{th}, 3^{rd} and octaves. Various chord types are included too, together with their 1^{st}, 2^{nd} and 3^{rd} inversions.

USING THE TRITON AS A CONTROLLER

There are different ways to set up the Triton or any instrument to act as a controller for another instrument or VST.

1. You can reassign the Triton controllers so they match the other instruments/VST controls.
2. You can reassign or use Midi Learn on the other Instrument/VST you are controlling to accept the Midi messages from the Triton
3. Or you can use a Mapper so that the Triton and the other instrument stay at their default settings. This is the approach used in the Midi Mapper.

USING WITH VIRTUAL INSTRUMENTS

If you want to play the Triton with a virtual instrument you will need to route its midi and audio signal to the computer. Set the midi in channel of the virtual instrument or DAW to the Triton Midi out channel.

TIP. For internal PC midi routing, if you ever need to do this :-

1. On a PC Download the Freeware application for internal PC midi routing. I recommend the free LoopMIDI Software | Tobias Erichsen (tobias-erichsen.de)
2. Set the Midi **output** of the app too the Midi input of your virtual instrument.
3. You can now transfer midi from one pc application to another application on the same PC!
4. On a Mac you just use the inbuilt IAG bus driver.

RECORDING USING SOFTWARE SUCH AS LOGIC, ABLETON, BITWIG, BANDLAB SONAR, CUBASE ETC.

You can record from the Triton directly into a midi/audio PC sequencer/editor like Bitwig, Logic, Cubase or BandLab Sonar. The user can send Triton midi out and audio out to midi and audio in on the DAW. This will enable you to edit the recording as desired in the DAW. Then send midi and/or audio to the synth. See Tutorial 7.

The advantages of doing this might be if you want to add VST instruments, external effects or use the DAWs editing features. However, if you want to use a DAW-less setup you can just use the Triton's features.

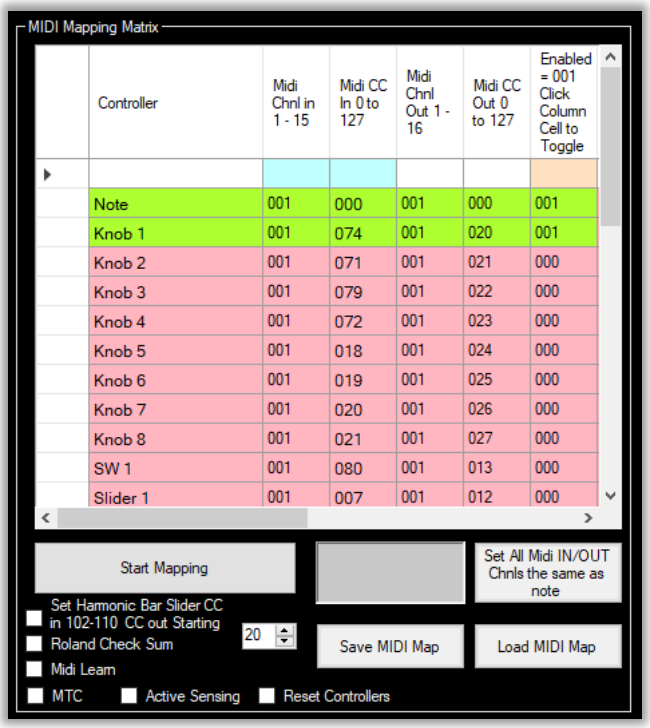
MAPPING MIDI MESSAGES

Midi Controller To DAW

TRITON TOOLS…

Midi Synth To Synth etc.

This software allows you to map any incoming Midi from any instrument/controller to a different Midi CC value / mid channel / sysex message. You can map a note to a CC or a CC to sysex! You might want to keep your midi assignments kept at default and just remap using this software to any VST or external instrument. The Nautilus drawbars for the CX 3 engine can be controlled by sysex messages. You can map midi CC messages to sysex with this mapper. If you have a midi controller which does not send sysex, which are most, but sends CCs, such as the Korg NanoKontrol, you can use the mapping matrix to translate it to sysex!



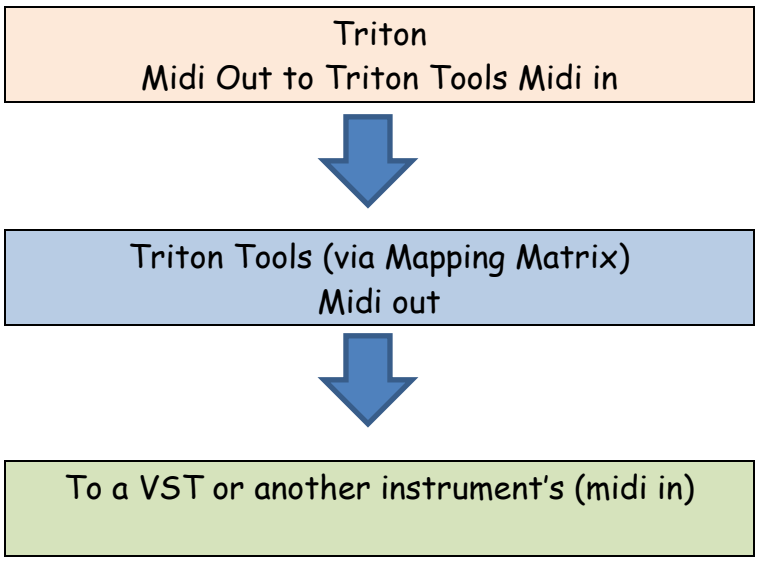
Hardware controllers are listed in the left column of the Mapping Matrix above. You can tailor these to your instruments if you edit the names and Midi CC in values for their controllers. You can sort alphabetically/numerically by clicking on the column headers. You can drag the column width as required. Those rows selected as active are coloured Green.

Inactive rows in the matrix are pink. If the right-hand column is 001 the row is enabled. If its 000 if the row is not enabled. By clicking on a rows right hand column, you can toggle whether the controller/row is active or not in the matrix.

Tip. *See assignable controller list in Kronos or Nautilus Parameter manual.*

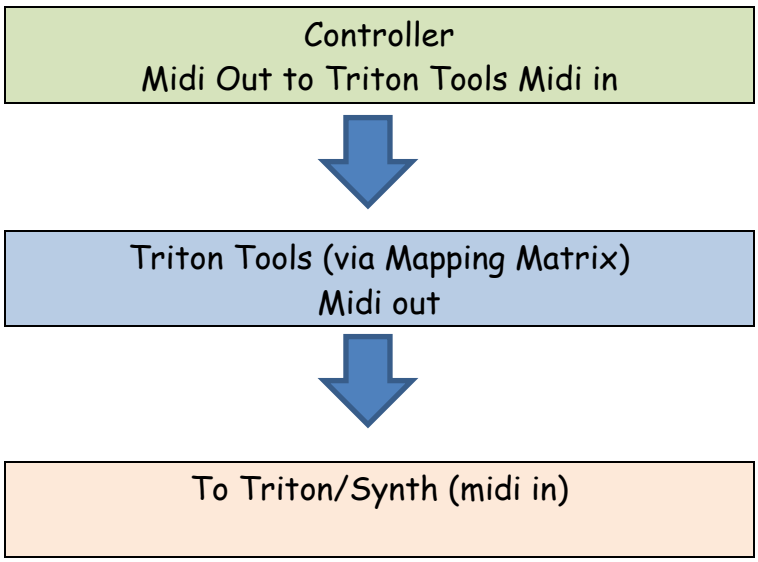
MIDI SIGNAL FLOW (1)

Triton/Kronos/Oasys control surface controlling another instrument or VST.



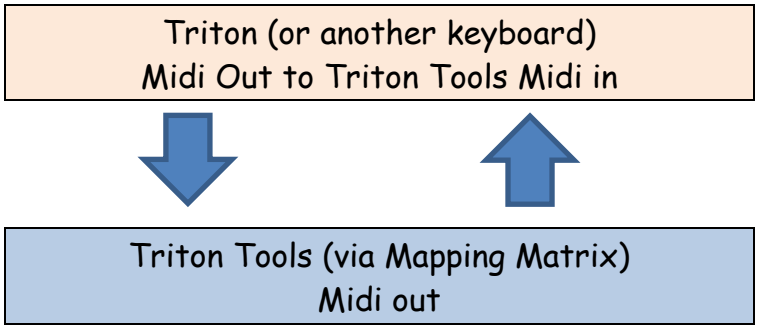
MIDI SIGNAL FLOW (2)

Controller controlling Triton/Kronos.



MIDI SIGNAL FLOW (3)

Synth control surface controlling another user defined parameter on itself by CC or Sysex.



Example. Here is how to make knob 1 CC 014 on Midi channel 1/zone 5 ext converted to Midi channel 002 CC 15 to send to another instrument. Note any values you enter MUST be in the form xxx. 3 digits. When you edit a value click on the row below to finalise it, notice the right-hand column icon changes when edited. To activate the row just click the rows right hand column. Row is now Green and value 001.

	RD Controller	Midi Chnl in 1 - 15	Midi CC In 0 to 127	Midi Chnl Out 1 - 15	Midi CC Out 0 to 127	Enabled = 001
	Note	001	---	001	---	001
✎	Knob 1	001	014	002	014	001
	Knob 2	001	015	001	015	000

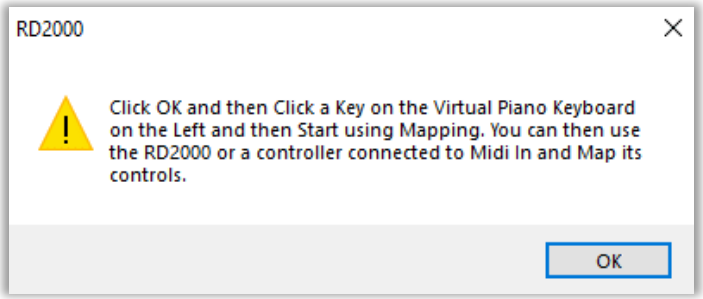
Edit mode for Knob 1 icon on left row is a pen.

	RD Controller	Midi Chnl in 1 - 15	Midi CC In 0 to 127	Midi Chnl Out 1 - 15	Midi CC Out 0 to 127	Enabled = 001
	Note	001	---	001	---	001
	Knob 1	001	014	002	015	001
▶	Knob 2	001	015	001	015	000
	Knob 3	001	016	001	016	000

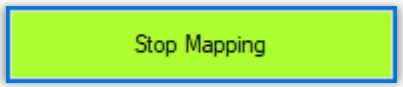
Edit for Knob 1 finalised by clicking on another row. The Icon has now changed to a triangle. To deactivate the row, click on its right-hand column which will change from 001 to 000 and the row will become pink.

REMAPPING A CC MESSAGE

1. Make sure 'Midi Thru' is not checked on this software. Set midi in from the Triton and midi out to your external synth/vst.
2. Operate a Triton controller. You can see the incoming CCs' in the text box to the left of the Matrix. Also See Midi Learn next page.
3. Set the knob 1 row of the matrix to incoming channel 001, Note. The Note Row of the matrix transmits the Note on/off/volume messages. So always use row 1 if you want notes transmitted and set it to the Midi output channel of the controller.
4. Set the CC output channel on the matrix for Knob 1 to Midi channel 002 and CC 015.
5. **To activate the matrix,** click on the 'Start Mapping' button. See below. You will then get the message box below which asks you to click a key on the virtual Piano keyboard to the left, which initialises the matrix. The 'Start Mapping' button will turn green.

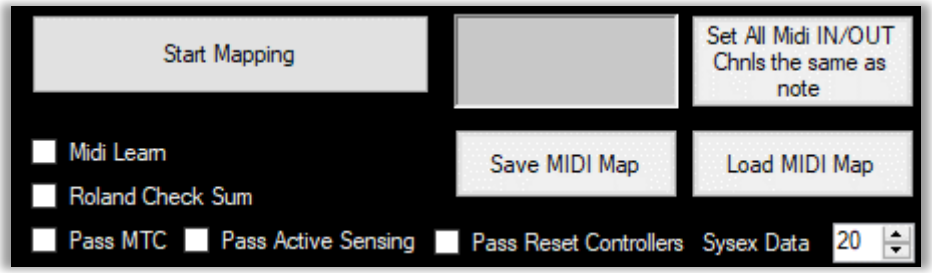


Now when you move knob 001 on the Triton the software now sends it to Midi out on the new midi channel 002 and CC 15 with its values. So, you can control external synths and VSTs with ease. For instance, you could use all 9 sliders with different Midi CC remapped to another midi channel. You can stop the mapping function by clicking the Green Button.

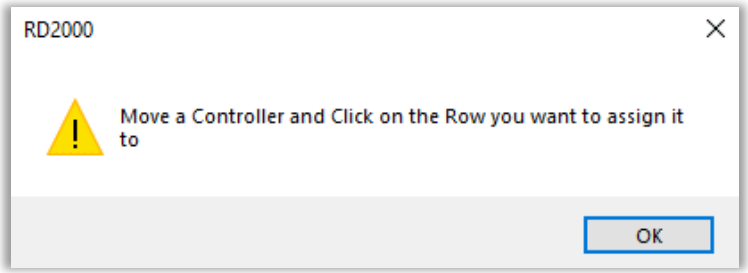


MIDI LEARN

Instead of entering the Incoming Midi Channel number and Midi CC/ Note Number arriving from your controller, you can just use Midi Learn.



1. Connect the Triton/Instrument/ Controller to the software and open the Midi Ports
2. Check the 'Midi Learn' Checkbox - see above. You will get a Message box.



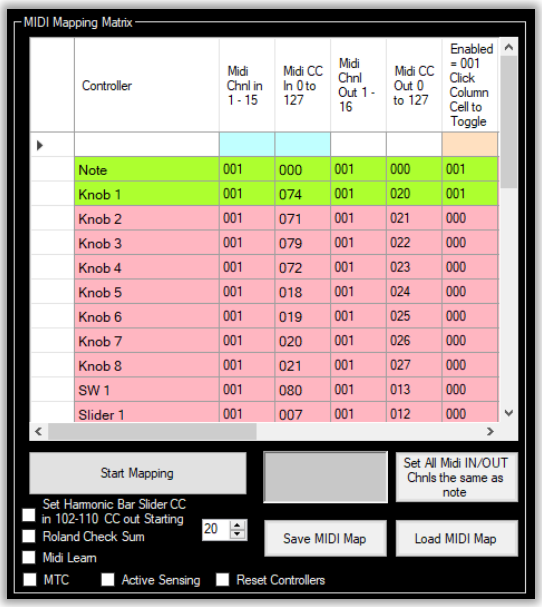
3. So just move a controller – Knob, slider, note etc and click on the appropriate row in the Matrix you want to assign it to. The new values will be set in the Matrix for the incoming Midi Channel and CC/note number.
4. Repeat point 3 for each controller you need
5. When finished uncheck the Midi Learn Checkbox

Note. For Pitch Bend, Channel or Polyphonic Aftertouch only the incoming Midi Channel is updated as this is all that is required.

Tip. To quickly set up Midi In/Out channels to the same as row 1 - Note – Click on the button ' Set All Midi IN/OUT Chnls the same as Note'.

SAVING AND LOADING MIDI MAPS

You can Save and Load Midi maps as a plain text comma separated files. This means you can have a map for each of your setups. You can use any number of the rows. Note. If you click on the table header you can sort numerically / alphabetically. For instance, you can list so the remapped channels 001 on the right-hand column are at the top. Below is a view of the lower half of the Midi Mapper when you scroll down. If you want to rename the Controllers you can save the new names when you save the map and then reload them.



Setting Midi Out Channel for All controls to the same channel

You will normally use the same midi out channel for all controllers. If you are controlling a VST or midi instrument you can use all of the Triton controllers if you want to. If you set the Note Midi out channel to the one you want. You can quickly set all the other controller Midi Out channels to the same value by clicking the button 'Set all Midi Channels out same as Note'. Remember the controllers you want to use need to be enabled by clicking in the right-hand column to turn the row green.

For information. CC Control Change messages start a Status byte of B followed by the Midi Channel (0 to 15). Hex(B0) to Hex(BF) in the Midi 1 Specification. -> 176 to 191 in decimal. Where B defines it's a CC message and the second byte 0 to F is the Midi Channel - which is normally transposed to Channel 1 to 16 for the user.

MAPPING MIDI CC TO CHANNEL AFTERTOUCH

Some models, such as the Nautilus (non-AT) don't produce channel aftertouch. This is not a problem though. You can produce Channel Aftertouch data if you assign a controller such as a Damper or Sustain pedal to generate the AT data. When you press a note, you can create the AT data by pressing a pedal, expression pedal or other controller.

To do this Choose your incoming channel number and incoming CC controller number (say channel 001 knob 1 - 014 as below). Then just set the outgoing channel number and set the Midi CC out value to 128. See Below.

	Controller	Midi Chnl in 1 - 15	Midi CC In 0 to 127	Midi Chnl Out 1 - 16	Midi CC Out 0 to 127	Enabled = 001 click column cell to toggle
	Note	001	---	001	---	001
	Knob 1	001	014	001	128	001
	Knob 2	001	015	001	021	000
	Knob 3	001	016	001	022	000

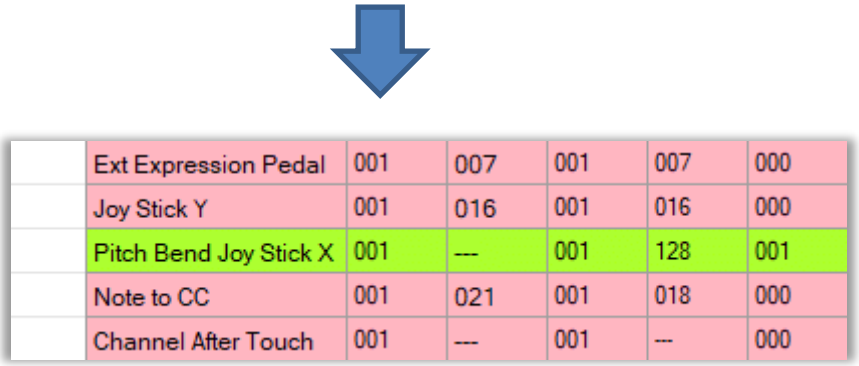
Then press 'Start Mapping'. Now when you play notes and move Knob 1 the channel after touch data will be sent value 0 to 127.

Note. Aftertouch would be assigned to a parameter. Eg cutoff frequency. This is useful if you have factory programs set up for aftertouch. However, the other way is just to map a controller directly to the parameter which aftertouch is assigned to. Map swell pedal to Midi CC Cutoff frequency directly.

PITCH BEND – JOY STICK X DIRECTION

Any Midi Data coming in as Pitch Bend data on the Pitch Bend Row (Joy Stick X direction) will be mapped and also sent out as Pitch Bend Data to the output channel specified by the user if the Midi CC out column is set to 128. If that column is set to 0 to 127 it will map pitchbend to a Midi Control Change CC message of your choice. In the example below pitch bend data is set as coming in on Midi channel 1 and being sent out on Midi channel 1. You can choose any channel between 1 and 16 for in and out. The right-hand column 001 means the row is active and hence the row is Green.

Midi Channel In column



	Ext Expression Pedal	001	007	001	007	000
	Joy Stick Y	001	016	001	016	000
	Pitch Bend Joy Stick X	001	---	001	128	001
	Note to CC	001	021	001	018	000
	Channel After Touch	001	---	001	---	000

128 = pitchbend or
Pitchbend MSB
0 to 127 = CC

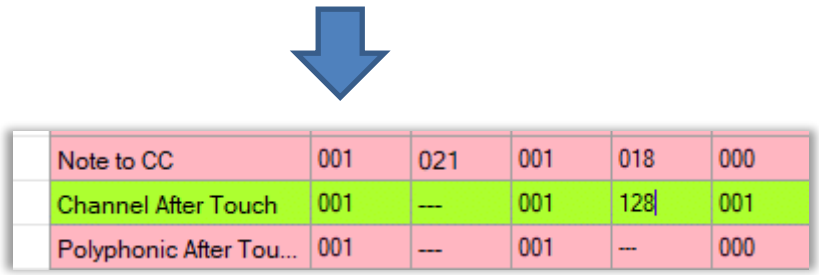
Midi Channel Out column

For information. Pitch bend messages start a Status byte of E followed by the Midi Channel (0 to 15). Hex(E0) to Hex(EF) in the Midi 1 Specification. -> 224 to 239 in decimal. Where E defines Pitch Bend and the second byte 0 to F is the Midi Channel - which is normally transposed to Channel 1 to 16 for the user. Pitch bend is defined by two bytes MSB & LSB which give a resolution of 128^2 values = 16384 values which give a smooth sweep in pitch, as 128 values would result in audible steps in the pitch bend.

CHANNEL AFTERTOUCH

The Triton , Kronos and Oasys generate Channel AT but not Polyphonic after touch, although they can respond to it. For the(non-AT) you can assign a controller to AT such as an expression pedal and send that AT data out to an External Zone. You can also use the matrix with a synth that does generate AT data and map to another synth that responds to AT. I've included Channel AT and Polyphonic AT for these purposes. You can map the incoming after touch data from one midi channel to another midi channel if a value of 128 is entered in the Midi CC out column. See below. You can also convert a channel AT message to a Midi CC message if a value between CC 000 and CC 127 is entered in the Midi CC out column.

Midi Channel In column



Note to CC	001	021	001	018	000
Channel After Touch	001	---	001	128	001
Polyphonic After Tou...	001	---	001	---	000

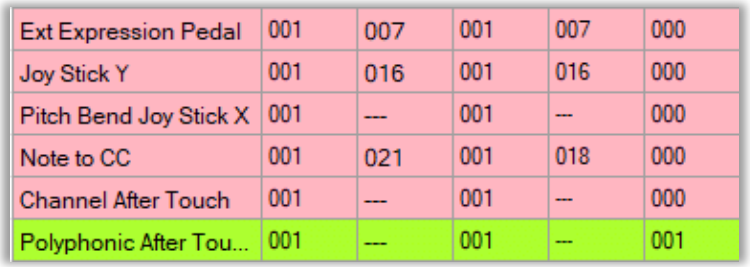
If CC out value = 128 then Chnl AT
if between 000 to 127 then CC

Midi Channel Out column

For information. Channel AT messages start a Status byte of D followed by the Midi Channel (0 to 15). Hex(D0) to Hex (DF) in the Midi 1 Specification. -> 208 to 224 in decimal. Where D defines Channel AT and the second byte 0 to F is the Midi Channel - which is normally transposed to Channel 1 to 16 for the user.

POLYPHONIC AFTERTOUCH

Poly After Touch produces a different AT message for every midi note 0 to 127 and can be very expressive. The Triton keybed does not generate Poly AT, but I've included it in case you use a synth which does.



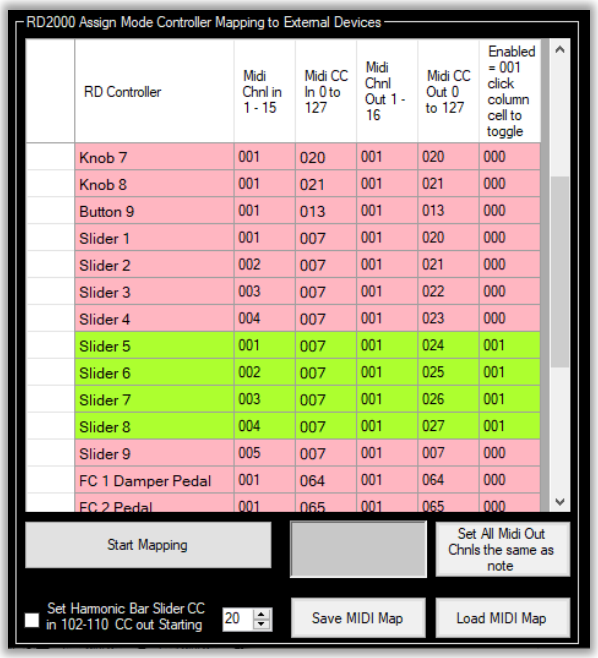
Ext Expression Pedal	001	007	001	007	000
Joy Stick Y	001	016	001	016	000
Pitch Bend Joy Stick X	001	---	001	---	000
Note to CC	001	021	001	018	000
Channel After Touch	001	---	001	---	000
Polyphonic After Tou...	001	---	001	---	001

This maps incoming Polyphonic AT to a different midi channel. Status byte A, Midi channels 001 to 016. -> 160 to 175 in decimal. It produces two data bytes – Midi Note number and its Poly AT value.

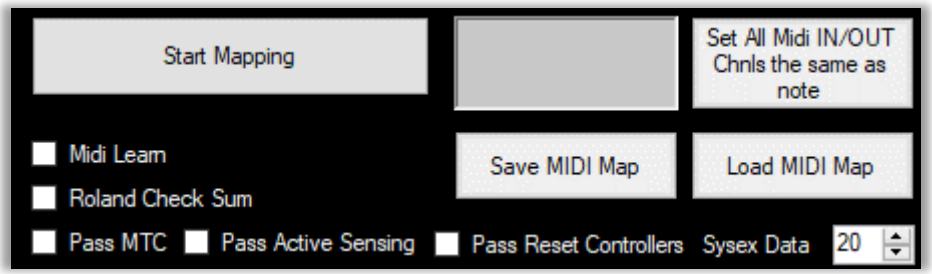
SETTING UP SLIDERS

Each fader outputs certain CCs on a defined Midi Channel by default,

To use each slider/fader with an external instrument or VST, all you need to do is set their midi channel to the external instrument's Midi channel and assign a different Midi CC out to each control. See below. Then enable their row by clicking on the righthand column so it becomes green. For any VST or external instrument refer to its manual for Midi CC's it responds to. Finally save your Midi CC map for future use.



Note the Slider Midi CC out column now runs from 020 to 027. All sliders output on Midi channel one now.



MAPPING A NOTE TO A CC

This row is a special mapping. It converts a note to a CC. You reserve one key on the keyboard to this function. Like before you choose the midi in channel and the mapped midi out channel. Below in is 001 and out is also 001. The midi note you might reserve for this feature is A0 midi note 021 (the lowest note on the Triton 8 keyboard) in this example, but can be any note up to C8 midi note 108. Generally best to choose one you won't use often for playing.

	Ext Expression...	001	007	001	007	000
	Joy Stick Y	001	016	001	016	000
▶	Joy Stick X	001	017	001	017	000
	Note to CC	001	021	001	018	001

Finally, you decide what Midi CC you want to map to. In this case 018. When you hit A0 the harder you hit the note the higher the CC's value. Notes output values (volume) 0 to 127. Note off, volume 0 is ignored here. You could use this feature for switches or variable CC values. Obviously gradual changes in CC value depend on how gradually you change your strike for subsequent A0 notes.

If Note to CC is enabled then the note number selected, 021 in this case – A0 - will only send Midi CC and note 021 will not sound. This is because you want to control CC value and only use the note as a controller. The 'louder' you play the A0 key the controller value will increase. As you play the note softer the CC value will reduce.

For information. Note messages start a Status byte of 9 followed by the Midi Channel (0 to 15). Hex(90) to Hex(9F) in the Midi 1 Specification. -> 144 to 159 in decimal. Where 9 defines it's a note and the second byte 0 to F is the Midi Channel - which is normally transposed to Channel 1 to 16 for the user.

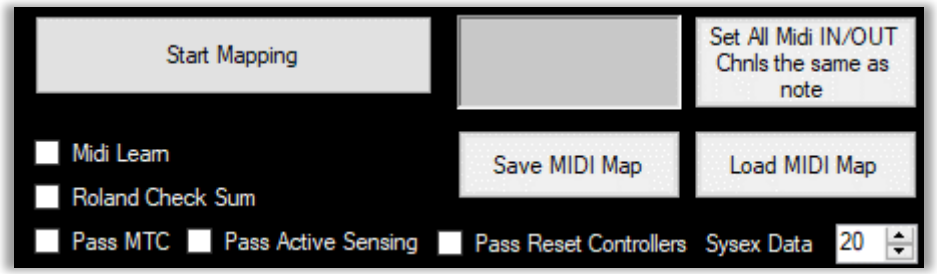
SUMMARY OF POSSIBLE MAPPINGS

To From	Notes	Poly After Touch	Midi CC	Chnl After Touch	Pitch Bend	Sysex 7 Bit and 4/4 Bit
Notes Note			5 			
Poly After Touch						
Midi CC			1a 	1b 		4 
Chnl After Touch (Pressure)			3a 	3b 		
Pitch Bend			2a 		2b 	

Notes

1a Set Midi CC out column value 0 to 127 to remap CC
1b Set Midi CC out column value to 128 to map CC to Chnl AT
2a Set Midi CC out column value 0 to 127 to map PB to CC
2b Set Midi CC out column to 128 to remap PB
3a Set Midi CC out column 0 to 127 to map Chnl AT to CC
3b Set Midi CC out column to 128 to remap Chnl AT
4 Set Right Hand Column to 001 for 7-bit. 004 for 7bit reverse faders and 002 / 003 for 4/4 bit. Input sysex string /max/min values - See next section
5 Set chosen Midi note number Midi CC in Column and Set Midi CC out value 0 to 127

MAPPING MIDI SYSTEM REAL TIME MESSAGES



Some Midi Messages are channel independent but can be passed through the Midi Mapper if you wish.

MTC - Midi Timing Clock pulses (plus Start, Continue and Stop). This allows you to have the Timing master device transmit through this software and out to the slave devices. Just check MTC check box to allow these messages to pass through. The timing clock runs at a rate of 24 messages per quarter note. Hex Status byte F1 to FC

Active Sensing – This sends a signal at a minimum of every 0.3 seconds to check that a midi device is connected and not become disconnected. Check the Active Sensing check box to pass through. Not all devices recognise this but it's part of the Midi specification. Hex Status byte FE

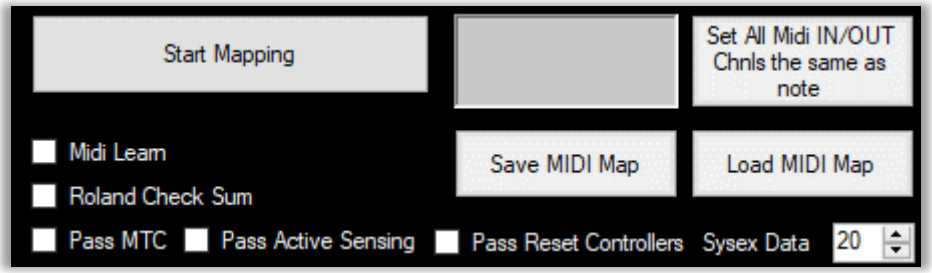
Reset Controllers – This returns all devices to their initialised power up configuration. Check the Reset Controller check Box to pass through. This would be sent from the input device by a manual command. Best to use with caution. Hex Status byte FF

Note. MTC and Active sensing will pass quite a lot of Midi data through. Normally they work fine. However, if you get any problems with Midi data becoming corrupted uncheck the boxes for these messages. It will depend a lot on the hardware/software instruments you use and if they followed the Midi specification faithfully.

MAPPING SYSEX

There are four important points:-

- The user must have a reasonable understanding of the sysex implementation of the instrument you want to control. The user has to input the start of the sysex strings.



- You can use this Korg, Yamaha and just about any manufacturer etc. from any control surface which generates CC messages.
- If you use a Roland instrument you will probably need the Roland checksum. If it requires a checksum then check the checksum box – see image above.
- The sysex only sends the LSB values which means only one byte of data is sent. This is either 7 bit or 4/4 bit sysex data. To map from a CC value there is generally only one byte to use anyway.

When you enter the Sysex string the software adds the data generated from the Midi CC mapping, check sums if required and the final " F7" to end the string. Note. You can only map Midi CCs. Notes, pitchbend or aftertouch are not allowed.

Example – Korg Nautilus

A Korg sysex string (which has to be in Hex), would look like this for say the Korg Nautilus. Changing the 16' upper manual drawbar.

F0 42 3g 00 01 5D 43 0B 06 00 00 00 00 00 DT F7

F0 always starts a sysex string
42 is korg products ID
3g where g is the instrument global Midi Channel – normally 0 (0 to 15)
00 01 5D Nautilus Instrument ID (Kronos is just 68)
43 = Parameter change command
0B 06 00 00 00 00 00 – defines 16' upper drawbar
DT is the data being sent – 0 to 8 for a drawbar
F7 always ends a sysex string

Example – Korg Triton Classic

A Korg sysex string (which has to be in Hex), would look like this for say the Triton Classic - setting a multisample:-

- User inputs start of sysex string "F0 42 30 50 41 03 00 01 00"
- Data collected from Midi CC input added by this software
- " F7" ends sysex string added by software.

The final string sent out is "F0 42 30 50 41 03 00 01 00 Data F7"

Example – Roland RD2000

Make sure the Roland Checksum check box is checked. Here is an example of the sysex string in Hex you would enter for the RD2000

"F0 41 10 00 00 00 5B 12 xx xx xx xx"

F0 = start of sysex string
41 = Roland ID
10 00 00 00 = Device ID – change this as necessary for your Roland model
5B = instrument ID = RD2000 – change this as necessary for model
12 = Message type for transmission of data to the Instrument

Enter HEX values xx in pairs xx xx xx xx = PARAMETERS from the midi implementation manual for the instrument

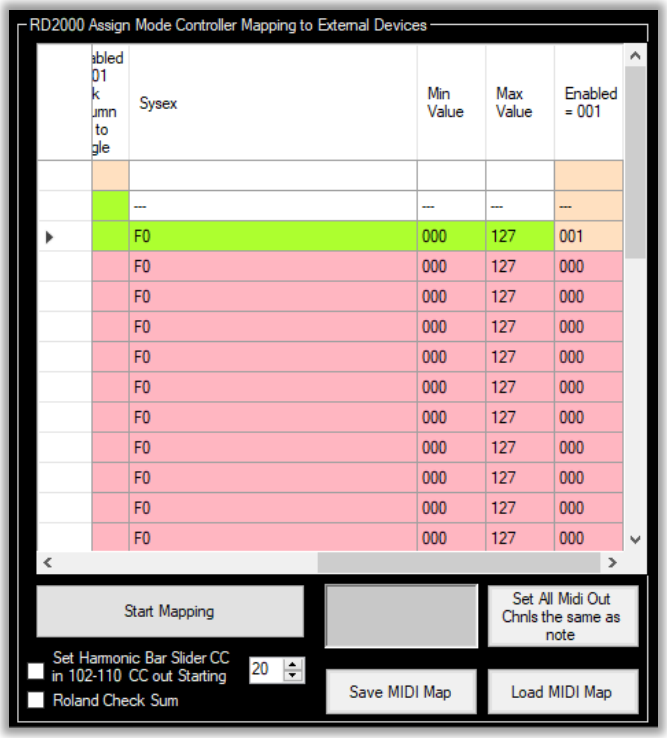
Data coming in from the Midi CC mapping - added by this software

The penultimate part of the string is the Roland Checksum - to ensure the data is properly sent – added by this software

Then " F7" end of sysex string - added by this software

SENDING SYSEX

When you scroll to the right of the Mapping matrix you can see the Sysex mapping section.



To send sysex the whole row has to be enabled "green" as before. To send Sysex instead of CC data. click on the right-hand column cell headed 'Enabled = 001" if the cell shows 000. The remaining part of the row will turn green. If you are sending to a Roland Instrument, check the Roland Checksum checkbox. Then Click "Start Mapping" button as before.

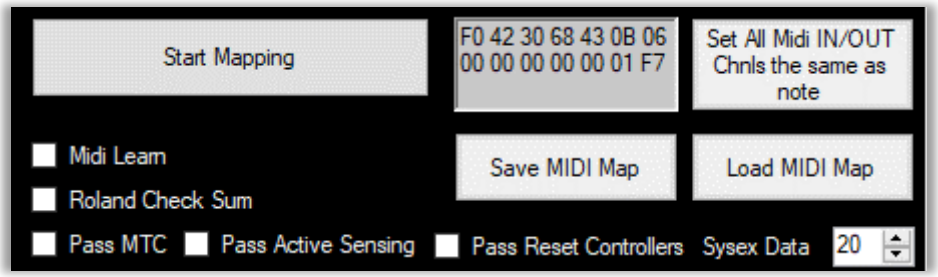
Remember you can't use Notes (row 1) or Notes to CC, pitchbend or chnl/poly aftertouch to map Sysex (rows 26 to 29). The sysex row will remain white. Not pink or green.

In the sysex column cell you enter the sysex string in Hex pairs starting with F0 with a space in between each pair and no trailing space. The Data part and F7 are added by the software. The Max and Min values turn the incoming Midi CC data to the range you want. For instance, a drawbar for a typical external instrument such as the Korg Kronos or Nautilus typically accepts a value range of 0 to 8. So incoming data 0 to 127 is scaled to 0 to 8 by the software if you set max value to 8 and min value to 0.

A Korg Triton Classic Synth example below for the "Knob 1" row.

	---	---	---	---
	F0 42 30 50 41 03 00 01 00	000	127	001
	F0	000	127	000
	F0	000	127	000
	F0	000	127	000

To check the sysex string works just open the Midi port and connect to your external instrument. Click on the green Sysex string Cell (F0 42 30…….) which you entered and the Sysex will be sent using a data value set by the updown box below the matrix – set to a permissible value. If it does not work you can edit the sysex string and try again! The grey textbox to the right of the 'Start Mapping' button shows the sysex that has been sent. See example below.



Once its working save the Map. You can then Load it another time.

Now you can then turn on Mapping as described earlier by pressing "Start Mapping" and control the sysex values with a physical controller on your Nautilus, or any other control surface, outputting Midi CC. In the example above slider 1 will control the sysex values transmitted. You can then add further rows of sysex strings if you want to use more physical controllers.

Tip… You can use windows cut and paste to copy values in any of the cells.

If you are comfortable with Sysex give it a try!

USING 4/4 BIT SYSEX DATA

A bit of theory which you can skip if you want. Most midi commands you need will use the standard 7 bit data format, However this software can map CC to both 7 bit and 4/4 bit data.

- 7-Bit data takes values from 0 to 127 -> 00000000 to 11111110

- 4/4 bit splits a 7-bit value into 2 values 0 to 15 and 0 to 127 -> 0000000 to 1111xxx and 0000000 to 1111111 in steps of 16 – so 7 bits can portray two values. Two Drawbars for instance !

Most sysex is 7-bit but you can use 4/4 bit in the matrix with the range of max/min values possible would be between 0 and 15.

Note. As Midi CCs only provide 7-bit data for their value, sysex parameters requiring an MSB & LSB can't be mapped. Nor can sysex requiring 4/4/4/4-bit data.

In this example we only need values 0 to 8 for the data. So

- The first data would have a Min of 0 (00000000) and Max of 8 (00010000)
- The second data would be represented by a Min of 0 and Max of 8 in the columns again but being mapped to 0 (00000000) to 127 (11111110) in steps of 16

Incoming CC of 0 to 127 would be scaled so that

- For the first data incoming CC 0 to 127 is mapped 0 to 8 - Min 0, Max 8

- For the second data incoming CC 0 to 127 is mapped 0 to 8 - Min 0 to Max 127 in steps of 16. So, 0 to 15, 16 to 31, 32 to 47 … each produce a value of 0, 1 ,2 etc.

The first 4 bits are accessed by putting 002 in the right column of the Matrix. The second 4 bits can be accessed by putting 003 in the right column.

PART 2

THE SYNTHS

ROLAND SH1000 SYNTH

INSTALLATION Version 2.4

Note you need Native Instruments Reaktor 6.x Player or Full Version installed on your PC or Mac. The SH1000v24.ens (ensemble file) can be found in the Nautilus Tools installation directory. Copy it to say your documents folder. Open this with NI Reaktor 6 or Reaktor 6 Player free download by double clicking on it. It can be run as a standalone or as a plugin in a DAW. VST/AU. Windows and Mac.

The SH-1000 is an emulation of the Roland SH-1000 synthesizer first released in 1973 and which was Roland's first synth. Its successor was the SH-2000 but that was designed to be more of a preset instrument and had far less flexibility. The SH-1000 was used by Vangelis, Blondie, The Band, Jethrow Tull, The Human League and Eddie Johnson (Roxy Music) as well as many others. This was also the first synth I owned.

It is available as a Native Instruments Reaktor 6 or a NI Reactor Player 6 instrument (if Player is run in demo mode).

See my website. Www.stuartpryer.co.uk for more VSTs and music applications.

Reaktor 6 can be a VST, AU or AAX plugin.
PC /Mac Specs. Windows 10 or 11 / OSX 10.14 or higher - Mac or PC

Main features

1. SH1000 comes with over 50 snapshots (programs) in 1 bank. Please lower volume when trying these as some are much louder than others.

2. I also recommend 'Simply Fast Shots'. A Bank by Paule Amca in the NI User Library for the SH1000. This is embedded in the ensemble as bank

3. I have tried to keep the instrument as the original as possible except for the settings and oscillator sections. If you use initialise snapshot 002 values it emulates the original instrument fully. The synth has info hints for all controls. You can adjust the waveform frequencies to apply slight mistune which gives a fuller sound. You can also vary the individual volume of the waveforms.

There is a Portamento switch to turn the effect on/off and you vary the amount by turning the knob like the original. The synth has the organ style tabs below the keyboard modelled. The preset instruments tabs link to the snapshots in Reaktor – 42 to 51. You can of course change these should you wish.

The settings box and oscillator box contain enhanced features over the original. If you want just the original instrument use program 002 initialise. In settings it's possible to vary the vibrato delay (value in milliseconds) and vibrato waveform. You can also vary the Growl and Waw waveform as well as cross fade parameters.

4. Pitch – adjust in Reaktor or on Instrument for fine tuning, in cents. Like original it has option to raise or lower by 1 octave.

5. Tremolo – cyclic variation in volume – choose waveform, depth and frequency. Tabs switches on/off and waveform type sine/triangle.

6. Vibrato–cyclic variation in frequency. Choose delay in settings box (sine wave only) waveform, depth and frequency. Original had 2 waveforms. Tabs switches on/off, delay and waveform type. Noise – adjust cutoff frequency and resonance of noise generator – select HP, BP or LP filter using LEDs. Original had just white/pink option. = HP and LP.

7. Growl – phase modulation. Waw cut off frequency modulation. You can Select waveform, depth and frequency'

8. Portamento – when polyphony set to 1 notes glides in frequency. When polyphony set higher say 2. When third note played first note glides to it. Original SH-1000 was monophonic. Switch on panel switches on/off.

9. The ADSR envelope and cut off frequency controls are modelled as faders as per the original instrument. Envelope can also control volume and cut-off frequency Filter – cut-off and resonance – filter type selectable – High Pass, Band Pass and Low pass – use yellow LEDs to select. Original was just high pass. VCF sensitivity knob added like the original.

If the ADSR is used for the filter this over rides the cutoff slider. Note the instrument responds to touch sensitive keyboards (note velocity)

11. Polyphony 1 to 128 notes. Original monophonic. Adjust polyphony in Reaktor.

12. Oscillator section - Waveform mixer – adjusts each waveform volume and de tuning. Original on/off only.

13.Modulation wheel changes note frequency when moved up or down – use LED switch below it to activate. Original had simple glide button.

14. Playing - use PC keyboard which is polyphonic or even better your own external midi keyboard. Full 128 midi notes accessible. Three octave on-screen monophonic keyboard activated by mouse will produce sounds which are not as rich as using the computer keyboard

or an external midi keyboard. Original limited to 3 octaves with pitch raise/lower by 1 octave.

15. Like Original has hold note tab which holds note until next note played.

16. See Fractal Sequencer on my website for advanced sequencer/generative music features which can be used with SH-1000. To connect use midi yoke freeware or LoopBe1 on windows or IAC driver on a Mac. Original had simple Random Note generator.

17 There are 128 available program slots in Reaktor for a Bank. Original had no option to save or load settings. Program/bank load and save.

18.Midi enabled – Original no midi.

19. Version 2.4 - has updated sound presets which are closer to the original. Fixed bug when changing presets. Added tool tips (info) for all controls.

20. Can be used as a plugin in via Reaktor in a host - Logic, Bitwig, Sonar, Cubase, Cantibile, Ambleton etc. Host DAW controls the audio and Midi parameters.

21. Multiple instances of synth can be run if Reaktor is used as a plugin.

23.For plugin place Reaktor.xxx in your normal virtual instrument folder.

24.For more information email me at stuartpryer@gmail.com

25. My website with more synths is at www.stuartpryer.co.uk

This text updated 11th November 2023

BLUE SYNTH 3 - PHASE MODULATED SYNTHESIZER

A dedicated windows stand-alone/VST Phase Modulated synth. The blue3.exe file will be automatically installed in the RD2000 editor installation directory. Click on the 'Blue Synth' menu item in the 'Synths' menu to open it from within the software. The Windows VST 2.4 Blue Synth 3.dll plug-in is in the Triton Tools installation directory as well so you can use in a DAW.

The top menu bar. Exe version only.

1. Midi in - allows the selection of all the available midi inputs
2. Midi out - allows the selection of all the available midi outputs including Microsoft GS wavetable synth often found on PC sound cards. Make sure midi in is different to midi out otherwise you will get a midi feedback loop.
3. Audio - allows the choice of ASIO or WDM sound drivers
4. Zoom on the executable version changes the size of the synth on the screen.

The Blue Synth is a touch sensitive, two oscillator phase modulation virtual synthesizer designed to provide a useful audio source for the playing or recording. It can produce lush pads or powerful leads. It can run as a standalone application or run with the Triton.

There are two oscillators to create the carrier waves which can both be phase modulated by a sine wave. The polyphony can be adjusted between 1 and 128 notes. You can choose the carrier waveform and apply an attack, decay, sustain and release envelope whose amount can be adjusted. The Modulator knobs control the detuning of the carrier from the modulator and the large knob the amount of modulation, Oscillator 2 can be detuned. The output can be fed through two filter banks with cutoff, resonance and track as well as ADSRs' affecting the filters. There is a ping pong delay and reverb. Programs can be saved. The built in Oscilloscope allows the user to view the wave forms and ensure the signal is not clipped. If it is you will get distortion. To stop this just reduce the 'amount' knobs of the two ADSRs on the left side.

There are 10 factory sounds preloaded in the synth courtesy of Yoa out of the 20 available program slots in each program bank. Programs/banks can be saved as text files.

Please set midi and audio preferences (direct sound or ASIO etc.) in synth menu before you use it.

All I ask is for feedback and ideas for additions or modifications. Also additional programs/banks welcome. I will host on my site.

PC Specs. Windows 7 to 11 - Laptop or PC - ideally >2gb ram and >2ghz processor. Also a mac running crossover for the .exe.

Main features

1. Touch sensitive.
2. Oscillator 1 and 2 have a choice of waveforms. Sine, square, Sawtooth, triangle and noise. 1 to 128 note polyphony.
3. Osc 2 Pitch – adjust by up to +- 5 octaves, semitone and fine. Slightly detuning and enriches the sound.
4. 2 Envelopes per oscillator control volume and cut-off frequency
5. Filter – cut-off and resonance – filter type selectable.

5b. Polyphony 1 to 128 notes.

6. 88 note on-screen keyboard activated by mouse or use PC keyboard keys or even better your own external touch sensitive midi keyboard. Full 128 midi notes accessible.
7. A stereo ping pong delay and reverb enriches the sound.

8. See fractal sequencer which can be used with synth and midi yoke or loopbe1 freeware to connect.

9. There are 20 factory sounds preloaded in the synth courtesy of Yoa (see link below) out of the 40 available program slots in each program bank. Programs/banks can be saved/loaded as text files. Program/bank load and save.

10. In standalone set midi in & midi out/audio/zoom feature at top of window.

For more information email me at stuartpryer@gmail.com

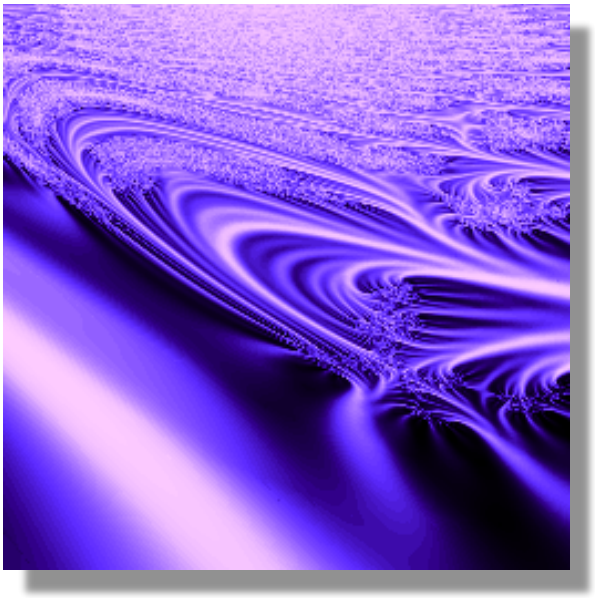
MIDI RECORDER

A Windows app.

The MIDI Recorder does three things

- You can record any midi signal coming into the recorder and play it back to its midi output.
- You can play standard MIDI files
- You can add an arpeggiator to any incoming MIDI note and send to its MIDI output. The arpeggio pattern can be designed by the user or a random patter can be generated. The speed, mode and number of steps can be varied.

FRACTAL SEQUENCER



"A Different Sea"

Looking into the infinite!

Fractals are infinitely complex objects created by simple equations. The equations contain complex numbers, both real and imaginary. Fractals contain no straight edges or curves which can be differentiated. They have the property of self-similarity. That is similar patterns occur at different scales. If you zoom into a fractal, you will never reach an end. Detail continues forever. Our limitation in creating them is the finite precision of variables held in a computer's memory.

In the natural world there are fractal like objects like fern leaves, branching trees, snowflakes. But you cannot zoom in forever as you will reach the atomic and quantum world. At the plank length – length has no meaning.

This software enables you to explore the world of Fractals both as images and as musical sequences. The latter can drive via Midi both virtual synths VST's and real midi instruments such as the Kronos. The more you experiment the more you will discover.

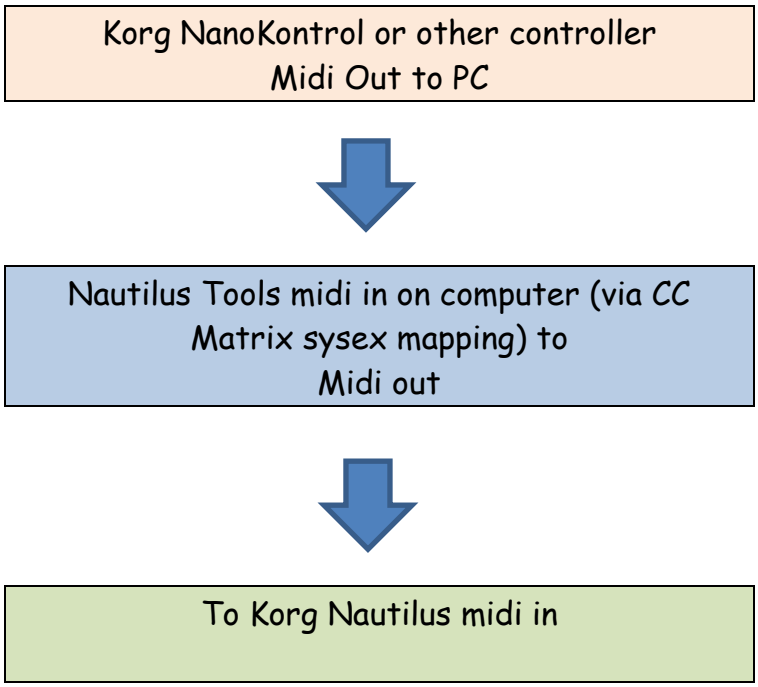
https://stuartpryer.co.uk/VirtualInstruments.htm

PART 3

APPENDIX 1 - USING NANOKONTROL FADERS FOR THE DRAWBARS

Ever wanted to control the Drawbars on the Nautilus with a hardware controller like NanoKontrol? Here's how to do it. For Sliders on a Controller such as a Korg NanoKontrol which don't output sysex.

MIDI SIGNAL FLOW



Sysex (System Exclusive) messages can control almost all an instrument's settings. And are very powerful. Now you can map a Midi CC message to a Sysex message. This can give you virtually total physical control of the Triton or another synth/keyboard. A MIDI Sysex message always starts with a Status byte F0 and the message always ends with F7. Manufacturers can put mostly what they like in between but they have to start with a manufacturer ID and instrument ID.

You can load the sysex part of the matrix from a file I've created in the installation directory called 'Nautilus upper drawbar c.txt' for the Nautilus and NanoKontrol 2. With a different controller set the incoming CC values for your particular controller.

For Information. In the Nautilus drawbar example we only need to send values 0 to 8 to the Nautilus to set each drawbar position. All drawbars would receive a Min value of 0 and Max value of 8 from the Matrix'. Incoming CC data from the controller fader is outputting values of 0 to 127. These would be scaled by the matrix so that they are mapped 0 to 8. To control the EXi CX3 16' upper drawbar on a Korg Nautilus the sent sysex in Hex would look like this: -

"F0 42 30 00 01 5D 43 0B 06 00 00 00 00 00 Data F7"

The 16' Drawbar Korg Nautilus 'Data' comes from the mapped incoming CC data value 0 to 127 and added automatically by the Matrix. The final "F7" is also added by the Matrix. This is the finished Matrix below. Normally midi in chnl would all be the same and the CC number in would be different on each row dependent on your controller's setup.

MIDI Mapping Matrix to External Devices

Controller	Midi Chnl in 1 - 15	Midi CC In 0 to 127	Midi Chnl Out 1 - 16	Midi CC Out 0 to 127	Enabled = 001 Click Column Cell to Toggle
Knob 3	001	079	001	022	000
SW 1	001	080	001	013	000
Mod Wheel 1	001	001	001	001	000
Slider 1	001	012	001	012	001
Slider 2	001	013	001	013	001
Slider 3	001	014	001	014	001
Slider 4	001	015	001	015	001
Slider 5	001	016	001	016	001
Slider 6	001	017	001	017	001
Slider 7	001	018	001	018	001
Slider 8	001	019	001	019	001
Slider 9	001	020	001	020	001

MIDI Mapping Matrix to External Devices

x	Min Value	Max Value	Enabled => 001 Click Column Cell to Toggle
	000	127	000
	000	127	000
	000	127	000
30 00 01 5D 43 0B 06 00 00 00 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 01 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 02 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 03 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 04 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 05 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 06 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 07 00 00	000	008	001
30 00 01 5D 43 0B 06 00 00 08 00 00	000	008	001

If you enter sysex values manually you enter a space between each pair of characters in the sysex string! When you input the string there is no space after the last character you enter. Eg,
"F0 42 30 00 01 5D 43 0B 06 00 00 00 00 00" in the above example.

The next drawbar would use a slightly different sysex string - See drawbar sysex table next page. To send sysex the whole row has to be enabled "green" as does the CC part to the left. To 'Enable' sending Sysex instead of CC data, click on the far right-hand column cell headed 'Enabled = 001" if the cell shows 000.

To check the sysex string works just open the Midi port and connect to your external instrument. Click on the green Sysex string Cell (F0 42 30…….) and the Sysex will be sent using a data value set by the updown box below the matrix – set to a permissible value. 0 to 127. If it does not

work you can edit the sysex string and try again! Once its working 'Save the Mapping' as a plain text file. You can then 'Load the Mapping' next time! Now your faders will control the drawbars.

F0 42 30 00 01 5D 43 0B 06 00 00 00 00 00 DT F7	= 16'
F0 42 30 00 01 5D 43 0B 06 00 00 01 00 00 DT F7	= 5 1/3'
F0 42 30 00 01 5D 43 0B 06 00 00 02 00 00 DT F7	= 8'
F0 42 30 00 01 5D 43 0B 06 00 00 03 00 00 DT F7	=4'
F0 42 30 00 01 5D 43 0B 06 00 00 04 00 00 DT F7	= 2 2/3'
F0 42 30 00 01 5D 43 0B 06 00 00 05 00 00 DT F7	= 2'
F0 42 30 00 01 5D 43 0B 06 00 00 06 00 00 DT F7	= 1 3/5'
F0 42 30 00 01 5D 43 0B 06 00 00 07 00 00 DT F7	= 1 1/3'
F0 42 30 00 01 5D 43 0B 06 00 00 08 00 00 DT F7	= 1'

Table of Nautilus sysex strings to control upper drawbars

Note. A Parameter Change is defined by 43. For lower drawbars swap 0B to 0C (12), Data (DT = 00 to 08) and F7 are added by the software from incoming CC, DT accepts a min value of 0 and a maximum of 8 for drawbars.

For Info. Extract of CX-3 Midi sysex & Dump from Nautilus Midi Implementation, Copyright Korg Inc.

[43] Parameter Change (integer) Receive/Transmit

F0, 42, 3g, 00, 01, 5D	= Excl Header
43	Function = parameter change
TYP	part of parameter id (see CombiAndSongTimbreSet.txt, etc)
SOC	part of parameter id (see CombiAndSongTimbreSet.txt, etc)
SUB	part of parameter id (see CombiAndSongTimbreSet.txt, etc)
PID	part of parameter id (see CombiAndSongTimbreSet.txt, etc)
IDX	part of parameter id (see CombiAndSongTimbreSet.txt, etc)
valueH	Value (bit14-20) (*4) = 00 drawbars
valueM	Value (bit7-13) (*4) = 00 drawbars
valueL	Value (bit0-6) (*4) = 00 to 08 drawbars
F7	End of Excl

OFS	bit	parameter	data(hex)	value	TYP	SOC	SUB	PID	IDX
68	3~0	[Drawbar] Upper Drawbar1 Level	00~08	0~8	11/12	6	0	0	0
	7~4	[Drawbar] Upper Drawbar2 Level	00~08	0~8	11/12	6	0	0	1
69	3~0	[Drawbar] Upper Drawbar3 Level	00~08	0~8	11/12	6	0	0	2
	7~4	[Drawbar] Upper Drawbar4 Level	00~08	0~8	11/12	6	0	0	3
70	3~0	[Drawbar] Upper Drawbar5 Level	00~08	0~8	11/12	6	0	0	4
	7~4	[Drawbar] Upper Drawbar6 Level	00~08	0~8	11/12	6	0	0	5

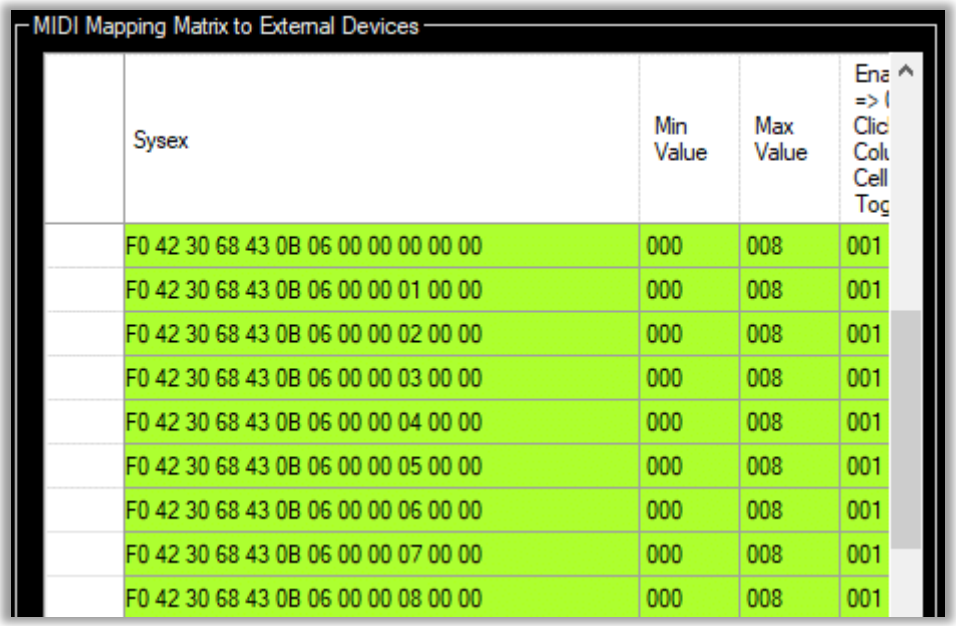
71	3~0	[Drawbar] Upper Drawbar7 Level	00~08	0~8	11/12	6	0	0	6
	7~4	[Drawbar] Upper Drawbar8 Level	00~08	0~8	11/12	6	0	0	7
72	3~0	[Drawbar] Upper Drawbar9 Level	00~08	0~8	11/12	6	0	0	8

If you want the faders reversed so they act like drawbars – so as you pull them towards you the sound gets louder - just put 004 in the right-hand column instead of 001. See below.

F0 42 30 00 01 5D 43 0B 06 00 00 05 00 00	000	008	004
F0 42 30 00 01 5D 43 0B 06 00 00 06 00 00	000	008	004
F0 42 30 00 01 5D 43 0B 06 00 00 07 00 00	000	008	004
F0 42 30 00 01 5D 43 0B 06 00 00 08 00 00	000	008	004

KORG KRONOS USERS

The Kronos string for the Upper Drawbars is almost the same except the sysex header is different; F0 42 3g 68. g = midi chnl. I've included a Kronos Upper Drawbar sysex map in the installation directory too for Kronos users. Its file name is "kronos_upper_drawbar_map.txt". Its set so the incoming midi channel from the midi CC is 001 which you can change, but you will need to change the incoming CC number in the next column headed 'Midi CC in 0 to 127' for each of the 9 sliders to match your Midi controller. See Kronos sysex map section below. The end of the string is the Data and "F7" end of sysex string which is added by the software automatically from the CC mapping.



Note. If you enter 004 in the right-hand column the faders will reverse so as you move the fader towards you the volume increases.

APPENDIX 2 - THE ROLAND RD2000 AS A CONTROLLER

The Left-Hand side of the RD2000 Stage Piano

The RD2000 is a very powerful controller keyboard and Stage Piano. Apart from the superb PHA 50 88 Note graduated weighted wood and plastic piano keyboard it has a full complement of controllers. By assigning zones (midi channels & Int sounds/Ext instruments) you can control its internal sounds and external midi devices, such as the Nautilus, other instruments or VSTs.

The control surface is similar to the Kronos and Oasys. It has 9 faders which in harmonic bar mode act as drawbars and can be mapped to sysex on the Nautilus using this software. Plus 9 knobs, an assignable button, 2 mod wheels, pitch bend/ mod lever and 4 pedal inputs. Used in conjunction with this software it can control almost anything. For details see my RD2000 Editor software and documentation.

There is an RD2000 mapping template in the installation directory 'rd2000 template.txt'. Note templates are interchangeable between Nautilus Tools and my RD2000 Editor.

Note. Another good controller is the Roland A300/500/800 pro midi controllers. They have a full complement of faders, knobs, pads and aftertouch and can send Note, CC and sysex messages and more. You can swap controller maps easily. I use an A800 pro 61 note controller and it is very flexible and has Midi Merge built in.

APPENDIX 3 – COMPLIMENTARY SOUNDS

The Tritons inbuilt sounds are really good. However, if you want some variations on them or create a virtual Kronos 3 see below.

KRONOS/ NAUTILUS/ OASYS ENGINES	COMPLIMENTARY SOUNDS
HD 1 – Multi Samples samples	Korg Triton & VST Native Instruments Kontakt VST Korg Collection
SGX-2 Piano *	Roland V Piano & S/N Piano Pianoteq VST 6.x or higher Synthology Ivory Kontakt – Alicias Keys, Una Corda etc
EP – 1 Electric Piano	Roland RD2000 e pianos and clavs Lounge Lizard VST Pianoteq VST 6.x or higher
CX-3 Organ	Native Instruments B4 11 & Vintage Organs VST B 3x IK Multimedia
MS20 – EX Synth	Korg MS 20 VST – in Kronos
Polysix – EX Synth	Korg Polysix VST - In Kronos
AL-1 Analog Synth Model	Korg Moss /Prophecy VST Reaktor ensembles Cherry Audio - Korg P3300, GX80 Arturia Various- Buchala, Moog Modular
Mod-7 FM Synth	Korg Opsix/ Moss / Prophecy VST Native Instruments FM 8
STR-1 String Model	Korg Moss /Prophecy VST Native Instruments Kontakt Roland SuperNatural sounds
Wave Sequencer	Korg Modwave Korg Wavestate Serum Native Instruments Massive X Arturia Mini Freak
M1 Sound Set **	Korg M1 VST – In Nautilus

* Expanded piano types in the Nautilus/Kronos 3
** Nautilus only

MY FAVOURITE VST'S

When I next build a Mac or PC these are the ones I would install. It's tempting to collect as many VSTs as possible but then use hardly any of them! This is my select list of the very best.

Korg Triton & Extreme Prophecy MS20 Wavestat Opsix Modwave	 Faithful replicas of the Triton Classic/Extreme Almost Triton Moss minus 2 engines - Polyphonic Faithful patch cord emulation of original Superb new synths – wave sequencer FM wavetable
Native instruments Reaktor FM8 B4 Massive X Kontakt - Una Corda	 Visual Programming with a big library of synths FM Hammond Organ Wave Table Klavins Piano – one string per note – very pure
Arturia Mini Freak	 Wavetable +
Roland System 8	 Circuit Modelling of the hardware version
Xfer Serum	Wavetable
Lounge Lizard	Fender Rhodes piano
Modart - Pianoteq	Great modelled Pianos
Moog	Model 15 - free Mini Moog - free AniMoog - free

APPENDIX 4 - SETTING UP A DAW

The Triton is a brilliant sound source. This tutorial shows you how to set up the Triton with a DAW (Digital audio workstation) so you can record your performance and add some Virtual Instruments.

1. Make sure you connect the midi in/out of the Triton to your DAW.
2. Make sure the Audio is set as the audio input to the DAW. Create a new audio track. Make sure you can hear the Triton playing through the DAW. I use a buffer of 256. Be careful not to drop the latency so low that you get pops and crackles or the cpu is overloaded. Aim for 10 ms.
3. In your DAW create a new midi track, make sure the Triton is set as MIDI and Audio input. If you create a midi track you can edit your performance later and even change the instrument.
4. Bounce or export your track to a wav file etc.

   Note. In Logic if you play the wave file back it will probably play on iTunes or Quicktime player. These will normally output the sound to the inbuilt mac speakers. If you use speakers or headphones connected to the synth be prepared for that. You can change this in 'audio settings' on the Mac.

APPENDIX 5 – MORE SOUNDS!

1. Korg collection, particularly Triton, Prophecy, Modwave, Wavestate and Opsix. These are superb instruments. If you have a Triton I recommend getting these VSTs to us with it.
2. Native Instruments also produce good software synths and include samplers (Kontakt), FM synth (FM8), Absynth, Wavetable (Massive and Massive X) and Reaktor where you can design your own or download other's synths – Moog Mini is a good Mini Moog emulation.
3. If you want to use a second keyboard you can either use a hardware synth or use a controller keyboard. Its personal preference. If you use a Triton 88, I recommend using a synth weighted midi keyboard with it. So the 88 Note Triton controlling its own sounds. The second keyboard can also be used as the upper manual for Organ tones and VSTs.
4. If you use a Triton 61 or 73 I would recommend a weighted Piano keyboard on the bottom rack. I use a Roland RD2000 stage piano which is a great controller keyboard and piano, particularly the German V Piano expansion.
5. For live playing of Virtual instruments I have found Bitwig to be the most stable DAW I've used and its cross platform. I particularly like the way it sand boxes the VST's. So if a VST crashes the DAW doesn't. Alternatives are Mainstage (Mac) or Cantabile (Windows)
6. For recording I recommend Bitwig Studio. Version 5 or higher. You can also design your own instruments and effects in it using PolyGrid and the Grid.

APPENDIX 6 - RECOMMENDED ACCESSORIES

1. I use headphones most of the time. Do not scrimp here as you are using a very expensive and beautiful sounding instrument. I use Sennheiser HD 600s'. Classic neutral sounding headphones for listening and mixing. Remember the Triton has a large dynamic range and requires Headphones which can handle this. Most CDs have compression applied and aren't so demanding. I cannot over emphasise how important good quality headphones are.
2. A good quality Headphone amp. I use Fiio but there are others. This provides a high impedance load for the Triton output. And the ability to drive high impedance headphones like the HD600 at 300 ohms. The result is smoother and warmer sound.
3. Speakers for home use. I use Yamaha active monitors and a Yamaha active subwoofer. If you play to an audience either the house PA or good quality keyboard amps/speakers.
4. Use balanced connections when possible and high quality leads.
5. Mac or PC i5 or higher ideally with an SSD and >8gb ram for virtual instruments – for recording and virtual instruments.
6. If you use more than one other hardware instrument an Audio Interface or a mixer. I use a Native Instruments KA6 mk2.
7. A very sturdy stand. I use a four-leg table stand. It folds, is compact and very strong.
8. Korg sustain pedal / Swell pedal / PS1 metal foot switch.
9. Surge protector – to protect your instrument
10. Dust cover - to protect your instrument
11. A good Daw. For Mac I recommend a host such as Bitwig, Logic or Mainstage. For Windows I recommend Bitwig or Cantabile (Cakewalk by Bandland is free). Plus NanoKontrol 2!
12. Virtual Instruments. See earlier appendix for recommendations. I also use my own Virtual Instruments
13. Possibly a second / third keyboard with a synth or Piano weighted action I use a Korg Triton Pro 76 with a Moss physical modelling board and a Roland RD2000 stage piano.

APPENDIX 7 - A TWO OR MORE KEYBOARD SETUP

I prefer using two keyboards. A piano weighted 88 note keyboard being on the bottom rack – I use a RD2000 and a top rack keyboard, a synth having a semi weighted action. I recommend a Triton 73 or 61 for internal sounds. The benefit of this arrangement is that for synths I use the Synth action keyboard or virtual instruments either separately or layered with its internal sounds and get a quicker and lighter action for them. I can also use the upper keyboard for the top manual of Organs and the RD2000 as a control surface. So, in summary the upper synth weighted keyboard just plays internal sounds or virtual instruments and the lower weighted keyboard, plays its internal sounds such as Piano, Electric Pianos and Clavs and or virtual instruments.

I recommend using Mac computers for recording. Their Midi and Audio functionality are much better than Windows PCs. You can also easily set up local networks to send midi to Windows PCs or iPads with The IAC network driver built into to the operating system. You can also set up aggregate audio devices.

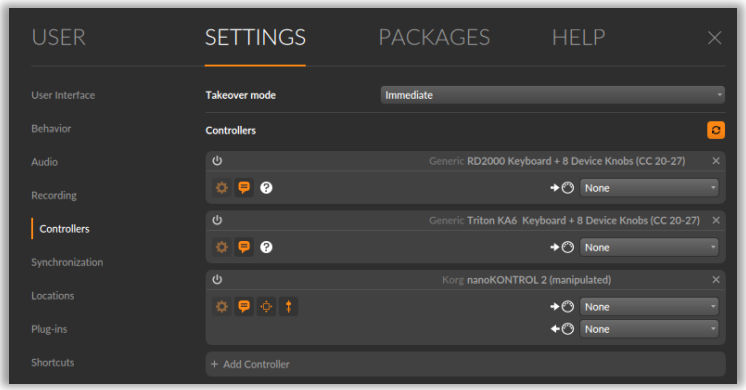
I also recommend a separate Midi interface for more than 2 instruments. Note. A midi output always goes to a midi input. For controller keyboards such as my Roland A800 Pro you generally only need Midi out as there are no onboard sounds. And or a Korg NanoKontrol2.

For Audio I use a separate Audio interface – A Native Instruments KA6 mk 2. It is midi and audio class compliant on a Mac and includes midi in/out. This then drives my Yamaha active speakers and Yamaha Sub Woofer (important in my opinion especially for synths and Pianos). I also use a laptop for editing / librarian functions for the Triton and RD2000 using my own software (Triton Controller, RD2000 Editor and Triton Tools).

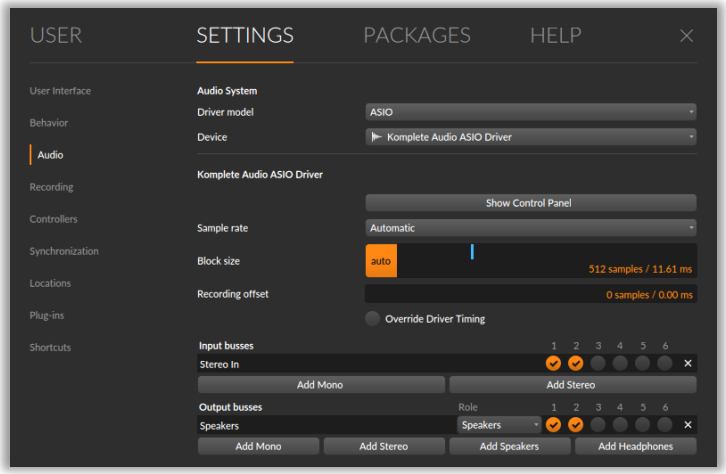
APPENDIX 8 – SETTING UP BITWIG STUDIO

Bitwig studio is the most intuitive DAW I have used. I have used many DAWs in the past! You can also build your own instruments and effects. So how do you set up the TRITON and Bitwig to work together so you can use the Triton sounds and the sounds from a computer and maybe another hardware synth mixed together?

MIDI. In Bitwig I use keyboard plus 8 knobs as the Controller Script. This enables the routing of midi channels properly. Set midi out of the Triton to Bitwig midi in and midi out of Bitwig to the Triton. If you are using VSTs then set their MIDI in from the Triton. NB. You need a Bitwig controller script for each hardware synth/controller. Another good script is DrivenbyMoss with the Generic Flexi controller where you can map controllers on unsupported equipment – ie. where Bitwig does not have a dedicated controller script.



AUDIO. Set audio driver model in Bitwig as Triton or the audio driver of your audio interface. Set audio output busses of Bitwig to speakers or headphones.



NB. Bitwig has the Grid, Note and Polygrid for creating your own effects and instruments! It supports VST 2/3 and 32/64 bit plug-ins and runs on Macs and PCs.

Setting up in Bitwig - Summary.

1. Define your Audio interface driver model – in Bitwig Settings - Audio
2. Each hardware keyboard/controller needs to be set up as a separate Midi controller. In Bitwig I use 'generic keyboard and 8 knobs ' as Korg and Roland are not well represented in Bitwig unfortunately. Give each controller a suitable name. The controller's inputs and outputs can be defined easily by name and Midi channels 1 to 16. – See Bitwig Settings.
3. I normally leave my Korg Triton on channel 5 for its midi transmit channel. Local control off to stop repeated notes and midi loops.
4. On the TRITON it is easy to toggle on/off Midi channels using Combinations.
5. In Bitwig add + a Hardware Controller(s) - (add device – HW controller) name the Controller you use eg. Triton. Specify Midi-in to Bitwig in the left-hand box which appears when you click on the track. Do this by the controller(s) name and midi channel(s).
6. Midi out is specified in the device viewer at the bottom left of the arranger screen. Specify Controller(s) and Midi Channel(s)
7. Finally add another instrument track(s) for software synths. Specify Midi In routing as above and audio out routing. Repeat for as many VST's as you need.
8. Set up audio track(s) to record the VST and /or the RD and /or other hardware synth(s). Define the audio tracks Audio in.
9. Remember you will only hear the tracks which you select, by clicking on them. Multiple selections are possible using ctrl windows/Cmd Mac.
10. When it's all working save the project as a Bitwig Template. That way you won't need to set this up again.
11. The first track I lay down is usually percussion. I use the Bitwig Drum Machine which has a very large collection of drum samples and has randomisation. To do this, on a track add the Drum machine instrument. Load a drum kit using the folder icon under the power button. Then draw using the pencil on the note editor or play your hardware midi keyboard to create the drum midi sequence for each drum type. Set loop points and loop. Press 'play'.

Controller Mapping

I normally tend to use several VST instrument per project and hardware instruments. I typically use up to 8 hardware knobs, so I manually soft controller map any hardware controllers I need. Bitwig controls can be mapped using the shortcut menu, or Generic Flexi Script by Moss or a listed Bitwig controller.

1. Set the controller to 'immediate' mode' – not catch''
2. Right click and choose 'manually map the controller or key' or use soft controller mapping which is better.
3. Turn a knob on your hardware controller and click on the onscreen knob and it's is mapped! You can see the list of Mappings in the Mapping Window. Goto step 2. Repeat for each hardware controller knob/slider/key you need.
4. Save the project then saves the mappings.

APPENDIX 9 – RECORDING SYSTEM AUDIO IN A DAW

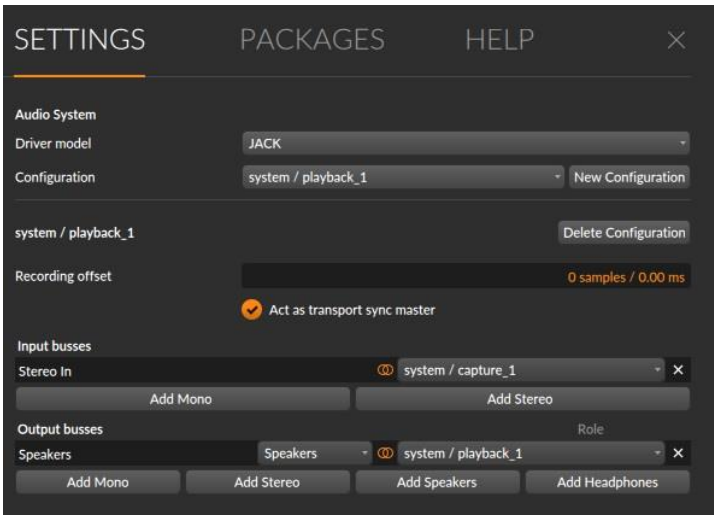
Sometimes you may want to sample sounds from the internet to use in your project. This is how you can do it. This requires internal audio routing. This does not come native with either Windows or Mac.

Windows

The Jack 2 audio driver works with any DAW. In Bitwig for instance; like Audacity (Waspi loop back), you can record system audio. Install the Jack 2 driver. Go to Settings/Audio in the DAW and set the
Driver Model = Jack
Config = system/playback
Stereo in to DAW = Jack – system/capture
Stereo out from DAW = Jack – system/playback and speakers.

You can now record an audio sample track in your DAW. And then maybe use the audio clips in your project, subject to copyright. See setup below. This is in Bitwig as an example.

Download | JACK Audio Connection Kit



Mac

Note. Jack 2 currently only works on Windows. There seem to be Mac issues with the MacOs installer to do with OS security at the moment. Soundflower no longer works, so I recommend you use the free driver Black Hole. Install the driver.

DAW audio Input = Black Hole.

If you can't hear the audio but can record it, create a Multiple output device of Black Hole and Speakers in Mac/Utilities Audio/midi setup. Then select the Multiple output device in Mac settings/sound. Set that output in your DAW.

Download BlackHole:

APPENDIX 10 - ELECTRONIC MUSIC

AN INTRODUCTION TO MIDI

MIDI stands for Musical Instrument Digital Interface and allows externally generated signals to control an instrument. For instance a synth to control another synth, or a computer to control a synth. Not only can MIDI control what notes sound and the instrument played using short MIDI messages, but it can control most of the controls on a fully MIDI enabled instrument using system exclusive Sysex messages; long MIDI messages.

MIDI has been pivotal in the development of electronic music. One of the founders was Roland's Ikutaro Kakehashi the other was Tom Oberheim. It was first successfully demonstrated in 1983 with a Dave Smith Sequential Circuits Prophet 600 connected to a Roland Jupiter 6. The standard is largely unchanged and has enabled computers to fully integrate with synthesizers. Before then there were different standards of control voltages CVs' which meant people were tied to a manufacturer's standard. MIDI enables one instrument to control another or a computer to control, or be controlled, by an electronic instrument. It's now the basis of synth and sequencer communications

The first sequencer program I wrote was for the Korg MS20 in 1982. Without MIDI I had to use digital to analog converters to send the monophonic control voltage CV instructions to the synth. The synth then sent back CVs' which had to be converted to a digital value for the computer, I had to build my own circuit boards. It was not an easy task but something MIDI now handles with ease. The latest synthesizers or sound modules are called software or soft synths. See the Bluesynth 3 included with this software. These synths only exist as a program running on a computer and this approach is immensely powerful but the sound quality depends on the quality of the VST and the sound card in the PC. They have not replaced hard wired synths yet, but may do so in the future. See the MIDI association website. https://www.midi.org/

Virtually all midi instruments have a General MIDI instrument list of programs which can be called upon. 128 pre-programmed instrument sounds.

General MIDI 1.0 Instrument list.

Piano:
1 Acoustic Grand Piano
2 Bright Acoustic Piano
3 Electric Grand Piano
4 Honky-tonk Piano
5 Electric Piano 1
6 Electric Piano 2
7 Harpsichord
8 Clavinet

Chromatic Percussion:
9 Celesta
10 Glockenspiel
11 Music Box
12 Vibraphone
13 Marimba
14 Xylophone
15 Tubular Bells
16 Dulcimer

Organ:
17 Drawbar Organ
18 Percussive Organ
19 Rock Organ
20 Church Organ
21 Reed Organ
22 Accordion
23 Harmonica
24 Tango Accordion

Guitar:
25 Acoustic Guitar (nylon)
26 Acoustic Guitar (steel)
27 Electric Guitar (jazz)
28 Electric Guitar (clean)

Strings:
41 Violin
42 Viola
43 Cello
44 Contrabass
45 Tremolo Strings
46 Pizzicato Strings
47 Orchestral Harp
48 Timpani

Strings (continued):
49 String Ensemble 1
50 String Ensemble 2
51 Synth Strings 1
52 Synth Strings 2
53 Choir Aahs
54 Voice Oohs
55 Synth Voice
56 Orchestra Hit

Brass:
57 Trumpet
58 Trombone
59 Tuba
60 Muted Trumpet
61 French Horn
62 Brass Section
63 Synth Brass 1
64 Synth Brass 2

Reed:
65 Soprano Sax
66 Alto Sax
67 Tenor Sax
68 Baritone Sax
69 Oboe
70 English Horn

Synth Pad:
89 Pad 1 (new age)
90 Pad 2 (warm)
91 Pad 3 (polysynth)
92 Pad 4 (choir)
93 Pad 5 (bowed)
94 Pad 6 (metallic)
95 Pad 7 (halo)
96 Pad 8 (sweep)

Synth Effects:
97 FX 1 (rain)
98 FX 2 (soundtrack)
99 FX 3 (crystal)
100 FX 4 (atmosphere)
101 FX 5 (brightness)
102 FX 6 (goblins)
103 FX 7 (echoes)
104 FX 8 (sci-fi)

Ethnic:
105 Sitar
106 Banjo
107 Shamisen
108 Koto
109 Kalimba
110 Bag pipe
111 Fiddle
112 Shanai

Percussive:
113 Tinkle Bell
114 Agogo
115 Steel Drums
116 Woodblock
117 Taiko Drum
118 Melodic Tom
119 Synth Drum

29 Electric Guitar (muted) 30 Overdriven Guitar 31 Distortion Guitar 32 Guitar harmonics **Bass:** 33 Acoustic Bass 34 Electric Bass (finger) 35 Electric Bass (pick) 36 Fretless Bass 37 Slap Bass 1 38 Slap Bass 2 39 Synth Bass 1 40 Synth Bass 2	71 Bassoon 72 Clarinet **Pipe:** 73 Piccolo 74 Flute 75 Recorder 76 Pan Flute 77 Blown Bottle 78 Shakuhachi 79 Whistle 80 Ocarina **Synth Lead:** 81 Lead 1 (square) 82 Lead 2 (sawtooth) 83 Lead 3 (calliope) 84 Lead 4 (chiff) 85 Lead 5 (charang) 86 Lead 6 (voice) 87 Lead 7 (fifths) 88 Lead 8 (bass + lead)	**Sound effects:** 120 Reverse Cymbal 121 Guitar Fret Noise 122 Breath Noise 123 Seashore 124 Bird Tweet 125 Telephone Ring 126 Helicopter 127 Applause 128 Gunshot

MIDI 1.0 MESSAGES – A BRIEF SUMMARY

All numbers are in Hex 0 to F. n is midi channel in Hex 0 to F. ie. Base 16.

MIDI Notes – Channel Voice messages.

8n (data1) (data 2), Note Off.
8n in Hex is 128 in decimal (n=0) to specify note off message. n is the Midi Channel. This is treated the same as a note on with volume 0.

9n (data1) (data 2), Note On.
9n in Hex is 144 in decimal (if midi channel n=0) to specify note on message. Data1 is midi note in hex 0 to 127, data2 volume 0 to 127. If data2 = 0 (volume 0) it is treated as a note off message.

Control Change CC messages

An Polyphonic aftertouch (data1) (data 2) – An = 160 in decimal if n=0.

Bn (data1) (data 2),
Bank Change is A Control Change message CC

First message MSB – most significant byte
B in Hex is 176 in decimal (if n=0) to specify CC type message.
n is the Midi Channel.
data1 is 00 and data 2 is 0 to 127 in decimal.
+
Second message LSB – least significant byte sent in quick succession
B in Hex is 176 in decimal (if n=0) to specify CC type message.
n is the Midi Channel.
data1 is 32 (20 in Hex) and data 2 is 0 to 127 in decimal.

Program Change is:
Cn (data1)
C in Hex (192 in decimal) if n=0 to specify message.
n is the Midi Channel.
data1 is 0 to 127 in decimal

Other messages

Dn Channel Aftertouch (data1) (none) - 208 in decimal if n = 0

En Pitch Bend (data1) (data 2) - 224 in decimal if n = 0

F0 System exclusive - 240 in decimal if n=0. (data length variable but includes Instrument manufacturer and instrument identifier at start) ends in F7 End of Exclusive EOX message.

FE (none) (none) Active Sensing (254 in decimal) – This data is filtered so they are passed through but don't show on the main text box as there would be a message every 0.3seconds. This feature was designed to turn off hung notes if a MIDI cable became disconnected. I never had this problem in 40 years of using MIDI.

TABLE OF MIDI CC MESSAGES

CC Number	Purpose	Description
CC 0	Bank Select	Allows user to switch bank for patch selection. Program change used with Bank Select. MIDI can access 16,384 patches per MIDI channel.
CC 1	Modulation	Generally, this CC controls a vibrato effect (pitch, loudness, brightness). What is modulated is based on the patch.
CC 2	Breath Controller	Often times associated with aftertouch messages. It was originally intended for use with a breath MIDI controller in which blowing harder produced higher MIDI control values. It can be used for modulation as well.
CC 3	Undefined	
CC 4	Foot Controller	Often used with aftertouch messages. It can send a continuous stream of values based on how the pedal is used.
CC 5	Portamento Time	Controls portamento rate to slide between 2 notes played subsequently.
CC 6	Data Entry Most Significant Bit (MSB)	Controls Value for NRPN or RPN parameters.
CC 7	Volume	Control the volume of the channel
CC 8	Balance	Controls the left and right balance, generally for stereo patches. 0 = hard left, 64 = centre, 127 = hard right
CC 9	Undefined	
CC 10	Pan	Controls the left and right balance, generally for mono patches. 0 = hard left, 64 = centre, 127 = hard right
CC 11	Expression	Expression is a percentage of volume (CC7).
CC 12	Effect Controller 1	Usually used to control a parameter of an effect within the synth/workstation.
CC 13	Effect Controller 2	Usually used to control a parameter of an effect within the synth/workstation.
CC 14	Undefined	

CC 15	Undefined	
CC 16 – 19	General Purpose	
CC 20 – 31	Undefined	
CC 32 – 63	Controller 0-31 Least Significant Bit (LSB)	
CC 64	Damper Pedal / Sustain Pedal	On/Off switch that controls sustain. (See also Sostenuto CC 66) 0 to 63 = Off, 64 to 127 = On
CC 65	Portamento On/Off Switch	On/Off switch 0 to 63 = Off, 64 to 127 = On
CC 66	Sostenuto On/Off Switch	On/Off switch – Like the Sustain controller (CC 64), However it only holds notes that were "On" when the pedal was pressed. People use it to "hold" chords" and play melodies over the held chord. 0 to 63 = Off, 64 to 127 = On
CC 67	Soft Pedal On/Off Switch	On/Off switch – Lowers the volume of notes played. 0 to 63 = Off, 64 to 127 = On
CC 68	Legato Footswitch	On/Off switch – Turns Legato effect between 2 subsequent notes On or Off. 0 to 63 = Off, 64 to 127 = On
CC 69	Hold 2	Another way to "hold notes" (see MIDI CC 64 and MIDI CC 66). However notes fade out according to their release parameter rather than when the pedal is released.
CC 70	Sound Controller 1	Usually controls the way a sound is produced. Default = Sound Variation.
CC 71	Sound Controller 2	Allows shaping the Voltage Controlled Filter (VCF). Default = Resonance – also(Timbre or Harmonics)
CC 72	Sound Controller 3	Controls release time of the Voltage controlled Amplifier (VCA). Default = Release Time.
CC 73	Sound Controller 4	Controls the "Attack' of a sound. The attack is the amount of time it takes for the sound to reach maximum amplitude.
CC 74	Sound Controller 5	Controls VCFs cutoff frequency of the filter.

CC 75	Sound Controller 6	Generic – Some manufacturers may use to further shave their sounds.
CC 76	Sound Controller 7	Generic – Some manufacturers may use to further shave their sounds.
CC 77	Sound Controller 8	Generic – Some manufacturers may use to further shave their sounds.
CC 78	Sound Controller 9	Generic – Some manufacturers may use to further shave their sounds.
CC 79	Sound Controller 10	Generic – Some manufacturers may use to further shave their sounds.
CC 80	General Purpose MIDI CC Controller	Generic- On/Off switch 0 to 63 = Off, 64 to 127 = On
CC 81	General Purpose MIDI CC Controller	Generic – On/Off switch 0 to 63 = Off, 64 to 127 = On
CC 82	General Purpose MIDI CC Controller	Generic – On/Off switch 0 to 63 = Off, 64 to 127 = On
CC 83	General Purpose MIDI CC Controller	Generic – On/Off switch 0 to 63 = Off, 64 to 127 = On
CC 84	Portamento CC Control	Controls the amount of Portamento.
CC 85 – 90	Undefined	
CC 91	Effect 1 Depth	Usually controls reverb send amount
CC 92	Effect 2 Depth	Usually controls tremolo amount
CC 93	Effect 3 Depth	Usually controls chorus amount
CC 94	Effect 4 Depth	Usually controls detune amount
CC 95	Effect 5 Depth	Usually controls phaser amount
CC 96	(+1) Data Increment	Usually used to increment data for RPN and NRPN messages.
CC 97	(-1) Data Decrement	Usually used to decrement data for RPN and NRPN messages.

CC 98	Non-Registered Parameter Number LSB (NRPN)	For controllers 6, 38, 96, and 97, it selects the NRPN parameter.
CC 99	Non-Registered Parameter Number MSB (NRPN)	For controllers 6, 38, 96, and 97, it selects the NRPN parameter.
CC 100	Registered Parameter Number LSB (RPN)	For controllers 6, 38, 96, and 97, it selects the RPN parameter.
CC 101	Registered Parameter Number MSB (RPN)	For controllers 6, 38, 96, and 97, it selects the RPN parameter.
CC 102 – 119	Undefined	
MIDI CC 120 to 127 are "Channel Mode Messages."		
CC 120	All Sound Off	Mutes all sounding notes. It does so regardless of release time or sustain. (See MIDI CC 123)
CC 121	Reset All Controllers	It will reset all controllers to their default.
CC 122	Local On/Off Switch	Turns internal connection of a MIDI keyboard/workstation, etc. On or Off. If you use a computer, you will most likely want local control off to avoid notes being played twice. Once locally and twice when the note is sent back from the computer to your keyboard.
CC 123	All Notes Off	Mutes all sounding notes. Release time will still be maintained, and notes held by sustain will not turn off until sustain pedal is depressed.
CC 124	Omni Mode Off	Sets to "Omni Off" mode.
CC 125	Omni Mode On	Sets to "Omni On" mode.
CC 126	Mono Mode	Sets device mode to Monophonic.
CC 127	Poly Mode	Sets device mode to Polyphonic.

FINALLY

My website details are http://stuartpryer.co.uk – the web site contains updates from time to time so keep checking. It also has my e-mail address. Please contact me if you find bugs or have suggestions on how to improve the software.

REVISION HISTORY – VERSION NUMBERS

Version 1.1.5 - 30th June 2025.

1. First release.

Version 1.1.6 - 30th June 2025.

1. Bug Fix. Changing Mode group box now works properly.

Version 1.1.7 - 1st July 2025

1. Updated documentation and corrected form size in PCG reader.

Version 1.1.8 - 1st July 2025

1. Added tool in pcg reader to search for repeated program, combination or Moss names.
2. Added tool to compare whole programs, combinations or Moss data
3. Added tool to compare programs, combinations or Moss sound setting data
4. Added ability to request Midi 7-bit data dumps from the Triton for Programs, Combinations, Drum Kits and Arps.

Version 1.1.9

1. Midi dumps can be saves as a plain text hex file, reloaded later and then sent back to the Triton. You can use the software as a midi dump data filer.
2. You can now audition a sound when you click on a PCG reader row. Click next row a note will sound again so you can hear the sound.

Version 1.2.0

You can now select favourite programs, combinations and Moss programs and save them Then reload at a later date. Also added ability to just show favourites.

Versions 1.2.1 to 1.2.3

1. Added features to the 88-note keyboard. Perfect fourths, fifths, octaves and runs.
2. Added 'Summarise PGC/PCH file' feature in Tools Menu
3. You can 'list programs and copy to windows clipboard' for importing into other apps such as word, excel for analysis or printing or creating PDF files. Etc. in Tools Menu
4. Added in search feature ability to relist programs and retain colours - checkbox.
5. Added Midi dump menu items. Including dumps for drum kits, arps and global data. Added 7-bit to 8-bit and 8-bit to 7-bit conversion routines.
6. Added Load Dump if dump is requested using Triton synths Manual Dump, as header is 6 bytes longer.
7. When listing programs, the lists begins with the file path to the pcg/pch.
8. Triton Midi Implementation Manual added to Help menu items.
9. Added Auto Audition menu item in Tools menu.
10. Added File/menu item – 'Length of Data Chrs' calculates length of data as number characters in bottom text box.
11. Added 'Book' icon to PCG reader header.
12. Added ability to find which combinations depend on any program.
13. Changed row numbering convention to Korgs. Program/ Combination Bank numbers 0 to 127.
14. Added Set List feature & midi control
15. Added ability to advance set list by incoming Midi CC or note data.
16. Added facility to move rows up or down to help organising order of sounds.
17. Bug Fix. If you click on last row in PCG reader which is always empty, sysex will no longer be sent.
18. Added error checking to Auto Audition input box values.
19. Built using latest version of Microsoft Visual Studio 17.14.8

Versions 1.2.4

1. Added setlist feature to update description of row with any amount of text.
2. Added description viewer with large white text on grey background at bottom of setlist form.
3. When you edit the setlist row description, the current description is in the big grey text box ready for editing and can be added to.
4. Added Moss schematic demonstration. (Moss - Multi Oscillator Synthesis System - Expansion board for the Triton series)
5. Various bug fixes

Version 1.2.5

1. PCG reader – when either programs, combis or moss data from PCG is listed, the mode on the Triton changes to the program or combi play mode. Rather than program or combi edit mode.
2. Added routine at switching programs - so notes from previous mode/program get cut off, otherwise get hung notes overlapping with current sound.
3. Added PCG Reader play button so you can play sounds sequentially by using Play button, space bar or return key.
4. Added Programs used in Current Combination – Tools Menu item.
5. Bug fix. When switching from program. Previously user had click twice to sound moss program although moss program was shown on screen. Now resolved.
6. Bug fix. Changing mode after loading PCG Reader form now works correctly.

Version 1.2.6

1. Added EXB Moss Manual to Help Menu.
2. Improved layout of 'Programs in current Combination'.
3. Improved PCG file summary formatting.
4. Bug Fix – summary of pcg files reported number of combinations number out by 1.

Version 1.2.7/1.2.8

1. Tidied installation folder files and installer.
2. Built using latest version of Microsoft Visual Studio 17.14.10

Version 1.3.0

1. Enabled software to run on a Mac running Wine.
2. Added 'Program PCM' form image from Triton Controller to illustrate what that software can do.
3. Corrected bug with auto audition sounds and play note when list of programs etc is clicked.
4. Added Tool Tips to PCG Reader and Set List forms.
5. Added Bank/Program change option instead of sysex.

Version 1.3.1

1. Added Midi chunk size and delay slider on Midi Settings form to allow software to send Midi Out at a controlled chunk size and rate for a Mac if user has midi transmission issues with long sysex messages.
2. These values when established are stored in the Windows Registry when you click close 'Midi Port' button.
3. Checked app operation in CodeWeavers Crossover for Mac.

Version 1.3.2 / 1.3.3

1. Updated Midi in/Out procedures to make software run on a Mac as fast as Windows by removing 'Richtextbox' usage which was slowing down the Mac running under Wine.
2. Built using latest version of Microsoft Visual Studio 2022 - 17.14.11
3. Bug fix. When changing from Load Programs to Load Combinations or from Load Moss to Load Combinations in PCG Reader, the rows weren't cleared of program names if there were no combinations in PCG file.
4. Updated Installation Wizard graphics.

Version 1.3.4 009 15th August 2025

1. You can now insert midi dumps into PCH files. You can keep you own favourite patches (Programs or Moss) using my PCH files (Program PCM or Moss) on your computer.
2. You can now rename a Program or Moss in a PCH file – see tools menu
3. Added large setlist advance button if you maximise the setlist form for using with Windows remote app.
4. Built using latest version of Microsoft Visual Studio 2022 - 17.14.12
5. Bug Fix the next PCH Program bank after E is now 6. Moss PCH banks numbered this way F(n) where n = 0 ,1 ,2 etc.
6. Bug fix. Different case file extensions .pch/PCH or .pcg/PCG resulted in different listings so upper and lower case extensions both work.
7. Bug Fix. Changed button colour – Midi Settings / 'Start Mapping' so the button shows correctly on a Mac.

SO THAT'S IT?

If there are features you would like to add, let me know and if it is possible, I will add them. Feedback and a wish list for additional functions are always welcome, together with suggestions for improving the documentation! Have Fun ☺ !

Stuart *Copyright 2025*

LINKS TO SOME OTHER SITES

1. For updates, Fractal Sequencer and a free virtual synth and midi file player/ arpeggiator visit my site https://stuartpryer.co.uk
2. KVR Forum and Facebook – great places for electronic music information http://www.kvraudio.com/
3. Korg http://www.korg.com
4. For free Windows Midi utilities try MIDI Tools by Mountain Utilities Mountain Utilities or Midi Ox at http://www.midiox.com/
5. For free internal PC midi routing I recommend LoopMidi Software | Tobias Erichsen (tobias-erichsen.de) or LoopBe1 http://www.nerds.de.
6. RPTMidi – for connecting a PC Midi to mac Midi. Software | Tobias Erichsen (tobias-erichsen.de)
7. Native Instruments – Producers of a fantastic suite of virtual instruments and effects. Special thanks to Stephen Parker General Manager, UK. http://nativeinstruments.com
8. Bitwig 5.x - a very modern DAW which runs on Macs or PCs. http://bitwig.com
9. Cantilble 3 VST host by topten software. A great windows equivalent to Mainstage. www.cantibilesoftware.com

RECOMMENDED BOOKS

- The Triton Documentation
- MIDI for the professional – Paul D Lehermann
- Vintage Synthesizers – Mark Vail
- The Synthesizer – Mark Vail

INDEX

N

O

P

R

S

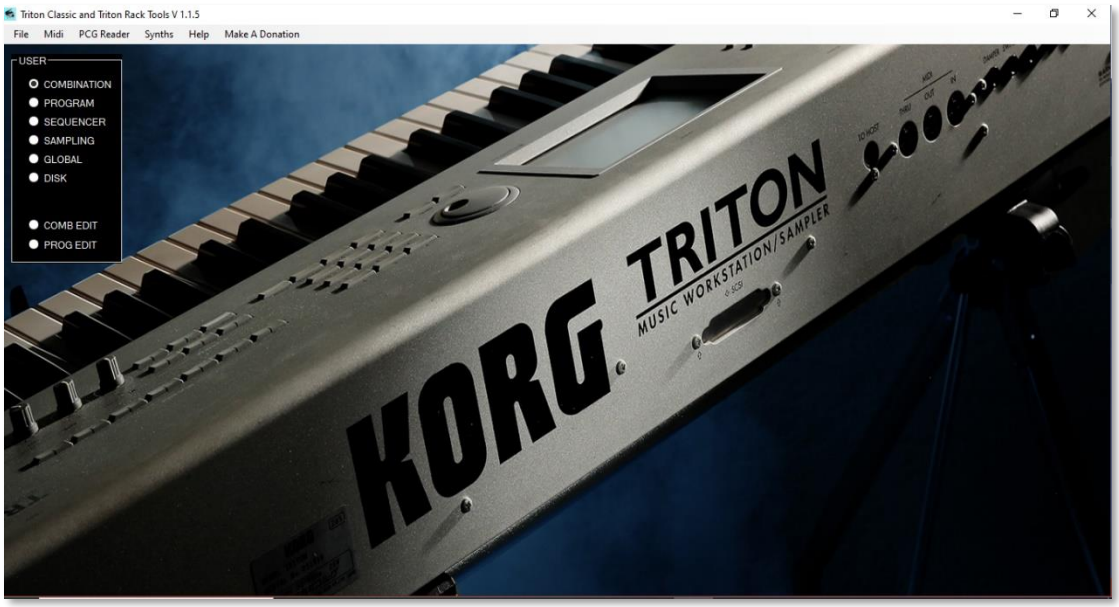
T

U

V

W

BACKCOVER


Triton Classic and Triton Rack Tools V 1.1.5
File
Midi
PCG Reader
Synths
Help
Make A Donation
USER
COMBINATION
PROGRAM
SEQUENCER
SAMPLING
GLOBAL
DISK
COMB EDIT
PROG EDIT
KORG
TRITON
MUSIC WORKSTATION/SAMPLER