

CME



User manual

NeoSynth

**Audio expansion card for CME
VX and UF keyboard range**

Version 1.1

Special messages section

This product utilizes batteries or an external power supply (adapter). Do NOT connect this product to any power supply or adapter other than one described in the manual, on the product, or specifically recommended by CME.

Warning

Do not place this product in a position where anyone could walk on, trip over, or roll anything overpower or connecting cords of any kind. The use of an extension cord is not recommended! If you must use an extension cord, make sure that the cord has the ability to handle maximum current needed by this product. Please consult a local electrician when possible.

This product should be used only with the components supplied or recommended by CME. When used with any components, please observe all safety markings and instructions that accompany the accessory product.

Specifications subject to change

The information contained in this manual is believed to be correct at the time of printing. However, CME reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

This product, either alone or in combination with an amplifier and headphones or speaker(s), may be capable of producing sound levels that could cause permanent hearing loss. Do NOT operate for long periods of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.

Important

The louder the sound, the shorter the time period before damage occurs. Some CME products may have stands and/or accessory mounting fixtures that are either supplied with the product or as optional accessories. Some of these items are designed to be dealer assembled or installed. Please make sure that stands are stable and any optional fixtures (where applicable) are well secured BEFORE using. Stands supplied by CME are designed for the respect products only. No other uses are recommended.

Notice

Service charges incurred due to a lack of knowledge relating to how a function or effect works (when the unit is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

environmental issues

CME strives to produce products that are both user safe and environmentally friendly. We sincerely believe that our products and the production methods used to produce them, meet these goals. In keeping with both the letter and the spirit of the law, we want you to be aware of the following:

Battery notice

This product MAY contain a small non-rechargeable battery which (if applicable) is soldered in place. The average life span of this type of battery is approximately five years. When replacement becomes necessary, contact a qualified service representative to perform the replacement.

This product may also use "household" type batteries. Some of these may be rechargeable. Make sure that the battery being charged is a rechargeable type and that the charger is intended for the battery being charged.

When installing batteries, do not mix batteries with new, or with batteries of different type. Batteries MUST be installed correctly. Mismatches of incorrect installation may result in overheating and battery case rupture.

Warning

Do not attempt to disassemble, or incinerate any battery. Keep all batteries away from children. Dispose of used batteries promptly and as regulated by the laws in your area. Note: Check with any retailer of household type batteries in your area for battery disposal information.

Disposal notice

Should this product become damaged beyond repair, or for some reason its useful life is considered to be at an end, please observe all local, state, and federal regulations that relate to the disposal of products that contain lead, batteries, plastics, etc. If your dealer is unable to assist you, please contact CME directly.

FCC information (U.S.A.)

Important notice: do not modify this unit!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by CME may void your authority, granted by the FCC, to use the product.

Important

When connecting this product to accessories and/or another product use only high quality shielded cables. Cable(s) supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

Note

This product has been tested and found to comply with the limits for a Class B Digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices.

Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problems by using one of the following measures:

- Relocate either this product or the device that is being affected by the interference.
- Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter(s).
- In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable. If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you cannot locate the appropriate retailer, please contact CME.

The above statements apply ONLY to those products distributed in the USA.

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Introduction

First of all, congratulations with the purchase of the NeoSynth! With this expansion board from WaveIdea you will add great sonic possibilities to your CME VX or UF keyboard.

In short the expansion board gives you the possibility to play high quality sounds in various music styles provided in sound banks that can be loaded from an optional SD card that fits into the expansion board. You can also change settings for sounds, MIDI channels etc. with the provided software patch editor.

With an external MIDI sequencer you can use the NeoSynth in multitimbral mode up to 16 MIDI channels. Wave Idea will develop new sound banks in the future to fulfill all your sonic needs! Depending on the sound bank, variations may also exist, so more than 128 sounds can be available.

Terminology

As a reference here is a short list of specific NeoSynth terms used in this manual.

Soundbank. This is what you have loaded into the NeoSynth. It's a set of (multi)samples, created by professional sound designers and determines how each of the instruments will sound.

Instrument: one sound from a sound bank with specific (multi)samples creating the sound plus specific settings for the instrument (for instance FX, filter, etc.).

Preset or patch: a set of parameters that describes all settings for a sound bank. It contains the 16 possible sounds for each MIDI channel, the effect settings, the audio routing settings etc. You create presets with the additional patch editor software and can save them on your computer.

Synthesizer channel: A term used to describe one of the 16 possible instruments that can sound at the same time in a so-called multitimbral setting. Because the NeoSynth listens to MIDI you can play 16 instruments at the same time over a maximum of 16 different MIDI channels.

One of those instruments with its specific settings and MIDI channel is called a synthesizer channel.

What's in the box?

Before you go on installing the expansion board please check if your box contains all the shipped items.

- NeoSynth Board;
- Rear plate for UF keyboard;

-
- Rear plate for VX keyboard;
 - CD-ROM;
 - Manual;
 - SD-card with GM sound Bank;
 - USB cable.

Installing the Neosynth expansion board into your CME VX or UF keyboard

First of all, be sure to unplug the power plug and USB cable from your keyboard to avoid electrical short-cuts during installation.

Also be sure to ground yourself to avoid static electricity which could damage your NeoSynth expansion board. Do not touch electronic parts of the expansion board either since this can damage the expansion card as well.

Step 1:

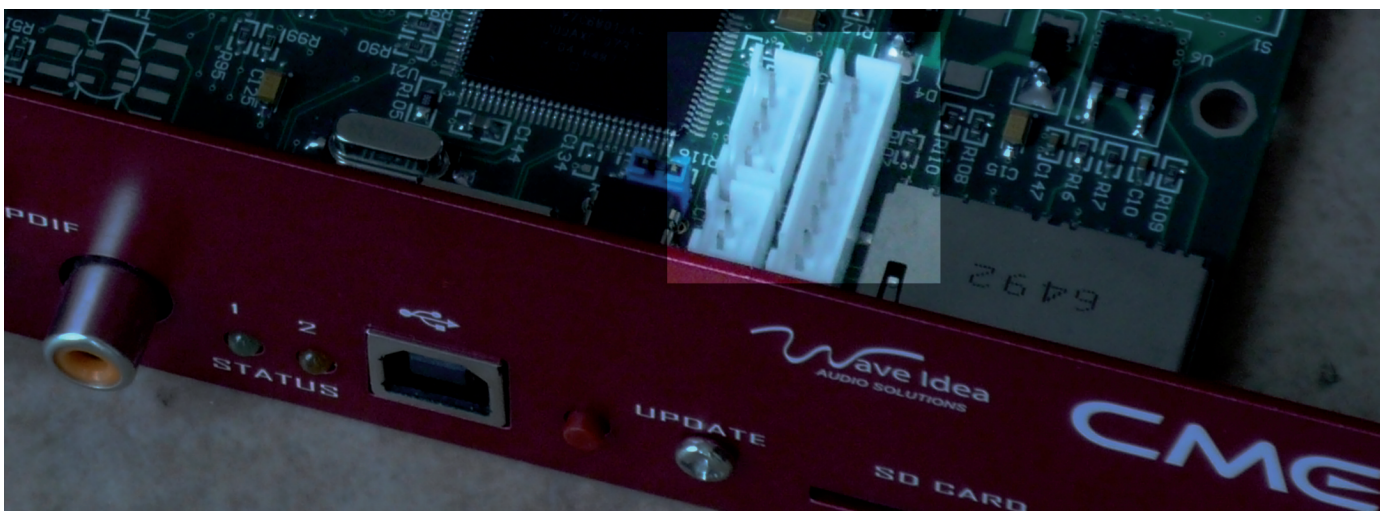
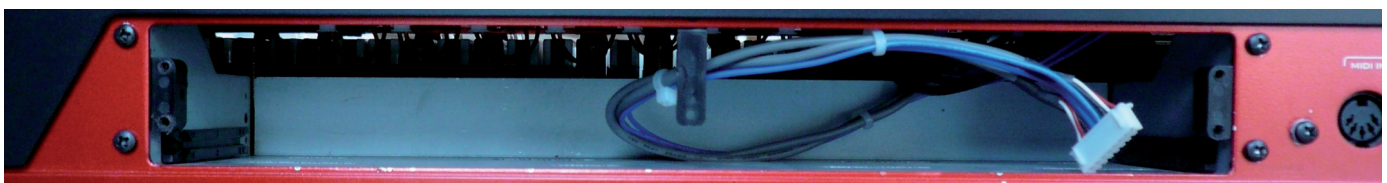
Unscrew the metal plate on your VX or UF keyboard on the back. The plate is holded by 4 screws on the VX keyboard and 5 screws on the UF keyboard (next three pictures shows the VX version).



Step 2:

Locate the power/communication connector that should be connected to the Neosynth expansion board (1 connector on the VX keyboard, 2 smaller connectors on the UF keyboard).

Connectors feature a mounting direction, the right direction must be respected, no force must be applied while inserting the connector(s).



Step 3:

Gently insert the Neosynth expansion board into the VX or UF keyboard and place the 4 respectively 5 screws to tighten the Neosynth expansion board.

Step 4:

The quickest way to be able to make sure your Neosynth is installed correctly is to plug in a headphone in the NeoSynth's headphones output and play the demo on your VX or UF keyboard (see the respective VX or UF keyboard manual how to do that. On the VX press the expansion link button).

Another way is to attach one or two audio cables from your Neosynth to your DAW, computer or amplifier to be able to hear the synth.

Attach a USB cable from your Neosynth to your computer to be able to edit instruments etc. with the provided patch editor software.

Step 5:

Power on the VX or UF keyboard. While doing that watch the back of the keyboard and see if the two leds on the Neosynth expansion board lit up (one yellow and one red one should go on for a few seconds and then go off again). When a USB cable is connected to your computer the red led will burn.

For more information about selecting the NeoSynth and choosing the various sounds please read the manual provided with your VX/UF keyboard.

By now it should be possible to play and hear the sounds of the Neosynth.

NeoSynth inputs and outputs

Connections

The Neosynth expansion board has several connection possibilities to increase the use in all kinds of settings (Grey NeoSynth: UF version, Red NeoSynth: VX version).



From left to right:

Headphones output (stereo):

A stereo output, mirrored from the main outputs with it's own dedicated mixer in the patch editor.

Note : By default, this output is connected to the synthesizer part of the NeoSynth.

Master output (L+R):

These outputs can be connected to your DAW, audio card, amplifier etc.

Note : By default, this output is connected to the synthesizer part of the NeoSynth

Auxilliary (Aux) output (L+R):

These outputs can be connected to your DAW, audio card, amplifier etc. and can be used as an extra pair of outputs, but also as a send/return together with the inputs to be able to use an external effect box with your Neosynth.

Audio in (L+R):

Here you connect any audio signal for various applications:

1. Make use of the FX section of the Neosynth. Since the synthesizer has a nice Reverb and Delay effect, you can route any audio through those effects
2. Same as 1, but now mixed with your synthesizer track! With the use of the patch editor you can make extensive mixes of both the input and synthesizer audio signal.
3. You can even use the inputs for karaoke! Connect a microphone through a microphone amplifier, use a GM soundset, play a General Midi songfile and sing along with it.

Digital output (stereo):

This is a mirror of the Analog Auxiliary Outputs and can be connected to a digital input on your audiocard, DAW, etc. it provides a 16 bit/48 kHz signal.

Note : By default, this output is connected to the inputs part, passing through the input FX engine of the NeoSynth.

Note 2: The equipment connected to the NeoSynth S/PDIF output must be configured to recover the S/PDIF clock from the NeoSynth S/PDIF output (slave equipment)

Red and orange leds

These two leds will help you to see the in which mode the NeoSynth is acting. You'll find more info in this manual about the various possible combinations for on/off or blinking leds.

USB connector

For use with a hardware expander to be able to edit instrument, FX and routing parameters using the provided patch editor software.

The Neosynth is class compliant with the USB MIDI specification, thus it does not need any driver to work with Xp-Sp2, Vista, Mac and Linux.

A special driver is available for Win Xp, it is not mandatory to install it, it is just used to replace the generic device name "USB audio device" by "Waveldea Neosynth"

SD-card slot

Here you can put in a SD card for loading various sound banks.

As soon as the sound bank has been updated, the SD card can be removed from the slot.

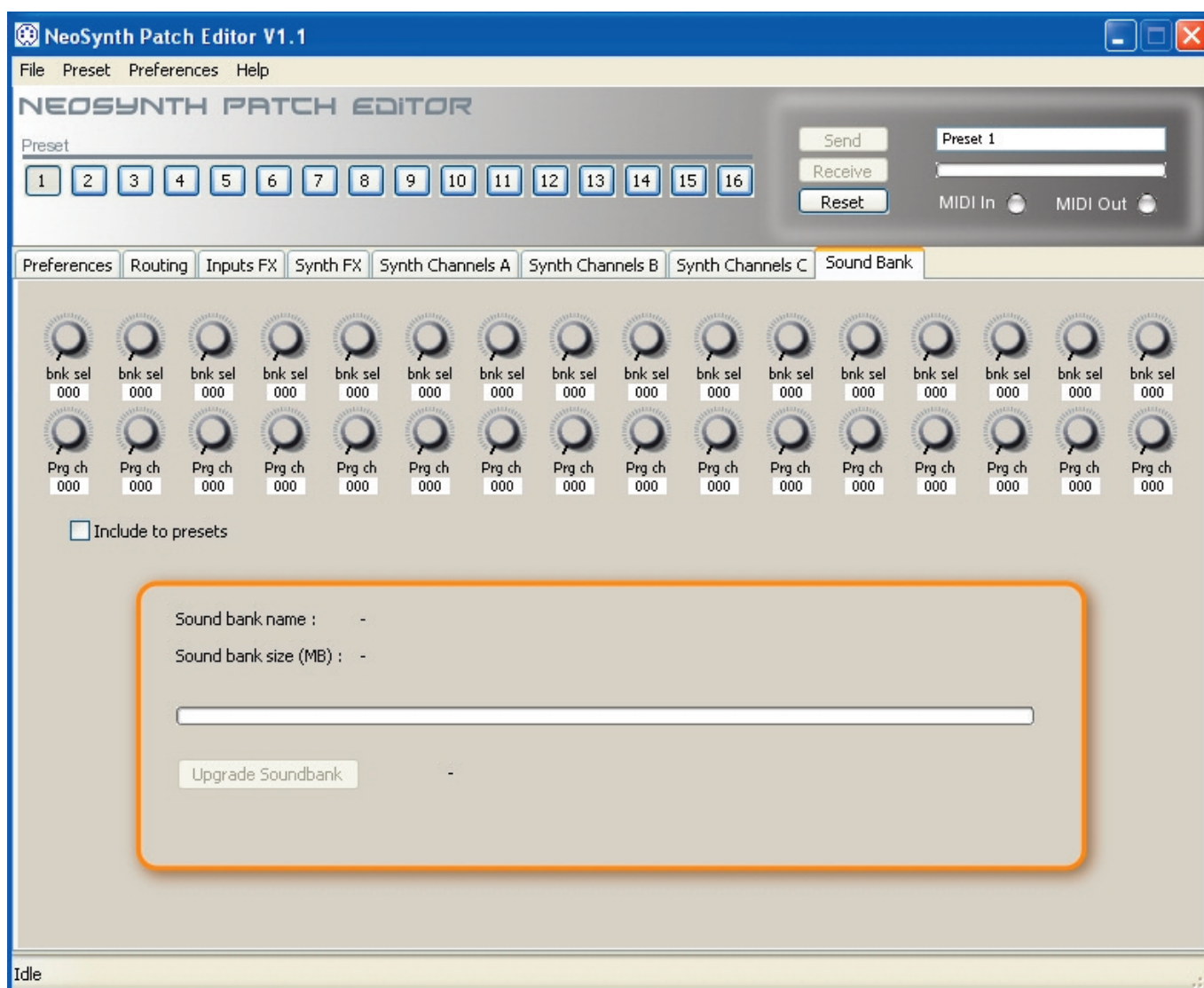
There are two ways for loading a sound bank from a SD card:

Software-less

The update can be done by inserting the card, reboot the VX or UF keyboard while holding the button besides the SD card slot. The Neosynth will read the sound bank from the SD card that way.

Using the patch editor

To update from the SD-card using the patch editor: put the card into your VX or UF keyboard.



Connect the Neosynth through USB to your computer, open the patch editor software and connect to the NeoSynth in the Preferences tab. Go to the sound bank panel (last tab) and click the button. A window will appear explaining how to upgrade. See also the next chapter about the patch editor

General

Leds behaviour

The behaviour of the leds on the Neosynth says something about the status of the NeoSynth in various conditions:

	<i>Status 1 led</i>	<i>Status 2 led</i>
	<i>Yellow</i>	<i>Red</i>
<i>Normal mode</i>		
Neosynth is booting	On	On
Neosynth idle	Off	Off
Neosynth idle – USB attached	Off	On
Neosynth playing – USB attached/not attached	Lighting	On/Off
<i>Sound bank or firmware upgrade mode</i>		
Previous sound bank erase	Ping pong fast	
Sound bank upgrading	Ping pong slow	
Firmware upgrading	Ping pong fast	
Firmware upgrade finished - Success	On	On
Sound bank upgrade finished - Success	On	On
Sound bank upgrade finished – Invalid SD card	Off	Off
Sound bank upgrade finished - Error	On	Off

Sound bank upgrade

This is done in 2 steps :

1. Erasing of previous sound bank : Leds will ping pong fast : requires about 7 minutes.
If using patch editor software, a progression bar is available for this first step;
2. Upgrade of new sound bank : Leds will ping pong slow : requires about 13 minutes.
If using patch editor software, a progression bar is available for this second step

See the next chapter about the patch editor software for details on this.

USB MIDI driver

The Wave Idea NeoSynth USB MIDI driver for Windows XP can be installed if you want to change the generic Windows XP USB MIDI driver name. But it is not demanded. For a description of the installation progress visit WaveIdea's website (<http://www.waveidea.com>) to download and read the PDF manual for that.

The patch editor software

The fun of the Neosynth doesn't stop here! When you have attached a USB cable to the Neosynth from your computer and installed the patch editor software (both Windows and Macintosh versions are available), you can change the sounds, store them, and make all kinds of settings for multitimbral use of the synthesizer in conjunction with a MIDI sequencer.

In this manual we will take an extensive look at the parameters that can be changed using the patch editor.

To do so, you need to connect your computer with the Neosynth through a USB-connection. There is no need for a driver, it is plug and play. Even in Windows XP, although you could use the provided driver to change the "universal USB device"-name into "Neosynth" as device name.

Installing the editor (Windows):

Unzip the editor file on the CD onto your harddrive. Then run the installer.

Installing the editor (Macintosh):

Unzip the editor file from the CD onto your harddrive. That will create a DMG file on the desktop from which you can copy the program into the programs folder on your Mac.

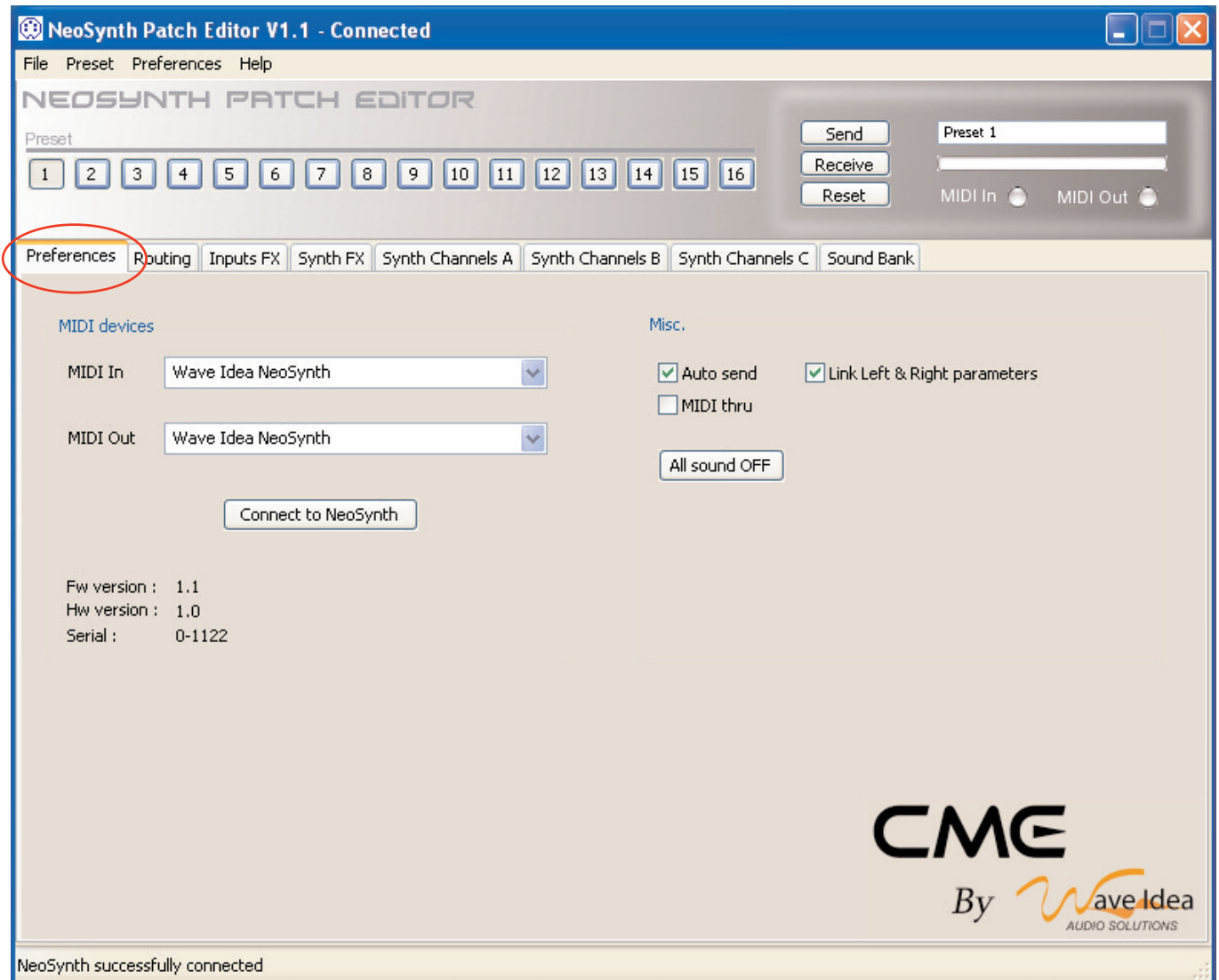
If you have made the USB-connection and turned on the VX or UF keyboard you can start up the patch editor. It will start up with this first screen, the "Preferences" screen.

The upper part of every screen in the patch editor will have the same parameters:

In here you can select various MIDI settings etc. We will go through every parameter of this screen first (see screen shot next page):

First you can select one of the 16 preset slots. A preset will contain all settings for the 16 channels. You can see a preset as a container for a multitimbral setup with a maximum of 16 (MIDI)channels. It contains the audio routing settings for the synth and the external inputs, the effect settings, the MIDIchannel settings, the so-called synth channel settings, containing parameters like filter cutoff, resonance, attack, decay, release etc. You can create as many as 16 presets.

Furthermore there are three buttons "Send", "Receive" and "Reset". With these three buttons you can send a preset to the NeoSynth, receive a preset from the NeoSynth and reset the NeoSynth to the factory preset. To the right of these knobs you see the preset number that is selected for sending or receiving, a progressbar which shows the progress of sending or receiving a preset plus two MIDI indicators, telling you if there is action going on on the MIDI in and/or MIDI out port. The user can change the name of the preset in the textfield. By default the names are Preset 1, Preset 2 etc.



Preference Screen

MIDI devices – MIDI In

In this pop-up screen you can choose the available MIDI device to send preset data to, in our case the NeoSynth. Midi in & out selections are saved so that are retrieved next time you start the software.

MIDI devices – MIDI Out

In this pop-up screen you can choose the available MIDI device to receive preset data from, in our case the NeoSynth. Midi in & out selections are saved so that are retrieved next time you start the software.

MIDI devices - Connect to NeoSynth

Clicking this button will make a connection with the NeoSynth to show you the firmware version, the hardware version and the serial number (under the knob). As soon as you see that info appear you know that the connection has been made with the Neosynth.

Misc. – Auto send

When selected, the software editor will send every parameter change made in the editor immediately. When unselected you will have to use the “Send” button in the upper screen to send the whole preset to Neosynth. Also you can right click on a knob or any other control to send it individually. (On OSX control-click).

Misc. – Link Left & Right parameters

With this one selected all parameters that have a left and right version are linked, meaning if you change one of them, the other one will change too with the same value. When unselected you can make complete individual settings for the left and right version of a parameter.

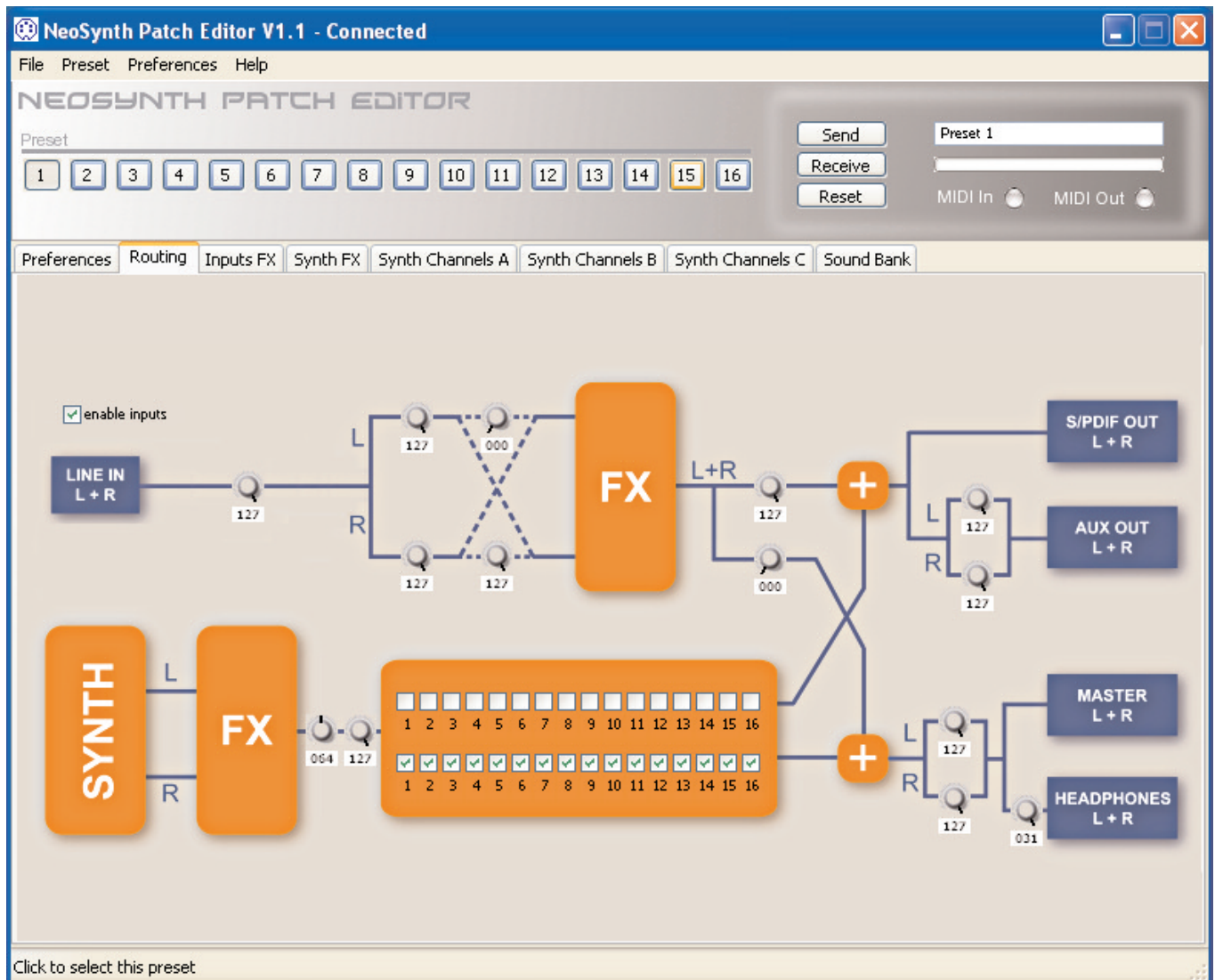
Misc. – MIDI thru

When the box is checked, all incoming MIDI data in the software will be forwarded to the MIDI out, so this has to be used with care since it can result in a MIDI loop (a confirmation box appears in the software mentioning this possible MIDI loop).

The MIDI thru can be used with a MIDI file player connected to the soft input. This way you can change the sounds by turning knobs in the software while the MIDI song is playing.

Misc. – All sounds off

Pressing this button will send a all notes off message to all 16 MIDI channels. This comes in handy when somehow the MIDI messages are messed up and you hear notes that won't stop anymore.



Routing screen

There are two stereo audio paths that can be mixed and panned in all kinds of ways. One stereo path (from here called external audio) is the line in left and right analog inputs going through a effects section which is then routed to the S/PDIF output (stereo) and mirrored on the left and right auxiliary outputs. On top of that you can mix this external audio signal into the synth audio path.

The second audio path is the stereo synthesizer audio path (from here called synth audio) coming out of the synthesizer engine and is going through the effects section, then going through a mixer where you can make settings for the 16 channels and then going out of the Master left and right outputs and Headphones output (stereo). This audio path can also be mixed into the external audio path.

You can even connect externally with two short audio cables the master L+R master outputs to the Line in L+R inputs to make use of an extra external FX box!

First, let's go through all the controls possible in this screen. We are going from left to right and from up

to down.

LINE IN L+R level control

This knob controls how much signal that comes in from the line inputs will be fed into the stereo signal path.

Enable inputs

This checkbox enables/disables the inputs.

The external audio path is split into left and right paths each with its own panning and level control. This makes it possible to have two completely independent mono signals going through the external audio effects section where they can have different settings.

Summed external audio left channel pan control

This knob controls the panning of the audio signal from the left external audio path. So you can feed something or a lot into the right channel as well.

It is fed into the external audio path after the level control of the right channel.

Summed external audio left channel level control

This knob controls the level of the audio signal from the left external audio path going into the effects section.

Summed external audio right channel pan control

This knob controls the panning of the audio signal from the right external audio path. So you can feed something or a lot into the left channel as well.

It is fed into the external audio path after the level control of the left channel.

Summed external audio right channel level control

This knob controls the level of the audio signal from the right external audio path going into the effects section.

After these controls the external audio goes into the dedicated effects section. See further on for details the Inputs FX section. When the audio comes out of the effects section there are even more controls!

External audio output level control

First there is a level control which controls the amount of signal going to the digital S/PDIF output (stereo) and the auxiliary outputs (left and right).

External audio mixing level control

This is a level control which controls the amount of the external audio signal that comes out of the effects section which will be fed into the synth audio path.

Now we are going to take a look at the synth audio path.

The left and right output of the synthesizer channels (16 at maximum) are fed into the dedicated synthesizer effects section. Later on in this manual the effects are explained in the Synth FX section. After the synth FX section you see two controls.

Synth audio post effects panning control

This control determines how much of the stereo signal from the synthesizer channels goes left and right. You can see it as a main panning control for all synthesizer channels.

Synth audio post effects level control

This control gives control over the combined level of all 16 synthesizer channels coming out of the synthesizer effects section. You can see it as a main output level control for the synthesizer audio paths.

Please be aware that you can control panning and level for each individual synthesizer channel in the Synth Channels B screen!

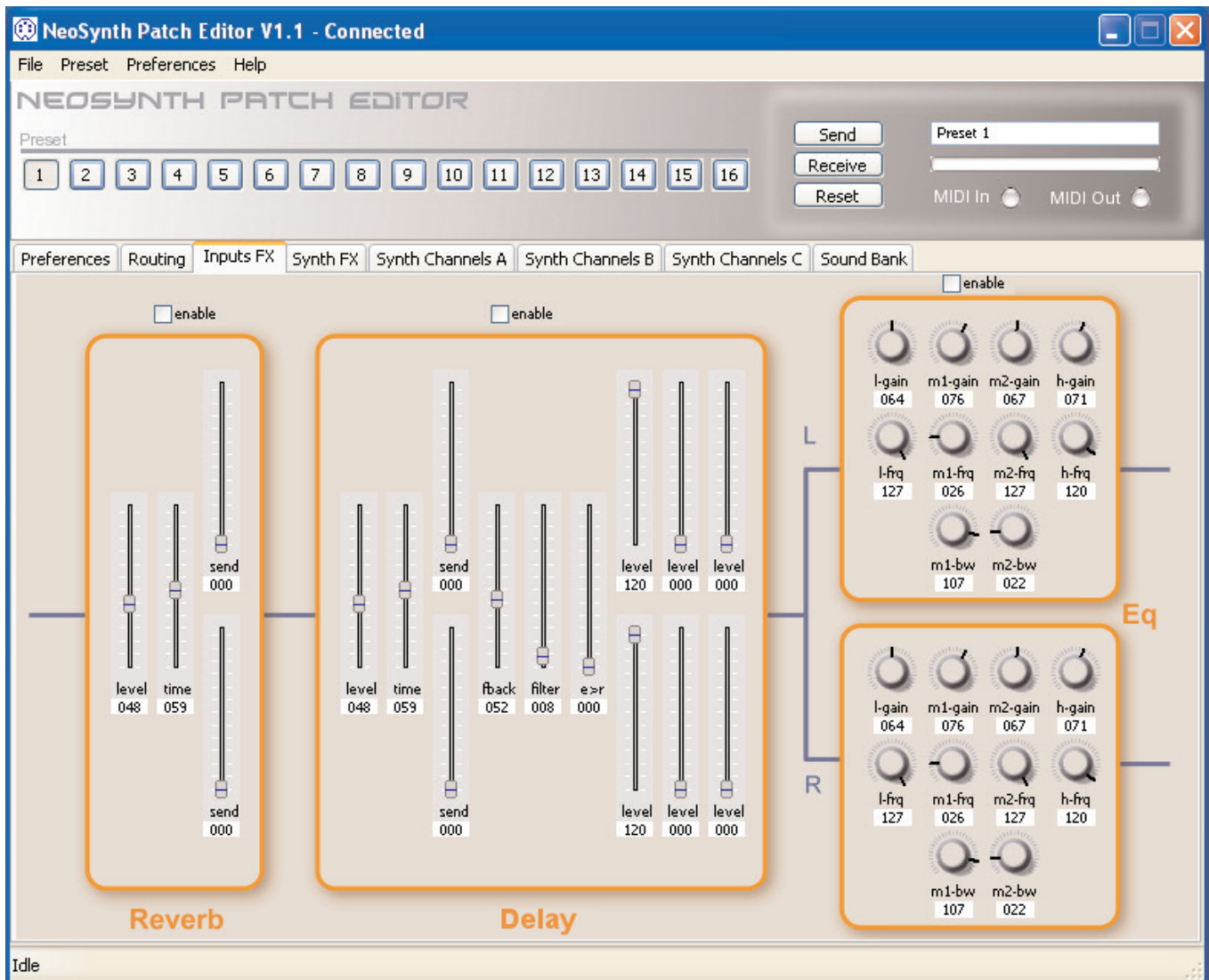
Synth audio path switches

Here you see a block with two rows of 16 checkboxes. These boxes control if the audio coming out of the synth effects section will go to the digital S/PDIF and auxiliary outputs or go to the Master and headphones outputs. The 16 boxes corresponds to the 16 MIDI channels of the synth. This way you can for instance direct a drum section of GM channel 10 to the aux outputs while the rest of the channels go to the main outputs.

The last control in this screen is the level control for the headphones output.

It's your own brain that can come up with good use of these possibilities. It is for instance possible to route one or more of the 16 synth channels to the auxiliary outputs so you can put this signal through a dedicated outboard effect. For instance having a dedicated outboard delay on one or more tracks. Or a compressor on the drumtrack (when you use a GM sound bank).

You can even use it as a send/return by routing something to the auxiliary outputs, put it through an effect and send that signal back into the NeoSynth using the line in inputs, make use of its dedicated effects block and bleed it into the master out mix!



Inputs FX screen

In this screen you can make all the effects settings of the external inputs dedicated effects blocks. There is a stereo reverb, stereo level delay and a stereo equalizer available, to sculpt your sounds in detail.

Let us take look at all the controls:

First there are three checkboxes to enable/disable each effect. If you don't need one or more of the effects it is wise to turn them off, since that will increase polyphony of the synth module.

Enable Reverb

This checkbox enables/disables the Reverb effect.

Enable Delay

This checkbox enables/disables the Delay effect.

Enable Eq

This checkbox enables/disables the Equalizer effect.

REVERB

The reverb effects gives space to a sound and is mostly used to make a sound more natural, by adding simulated reflection signals like they exist in the real world.

We all know how our voice sounds inside a cathedral or the bathroom. That effect is called reverb. The sound of our voice reflects against walls, ceilings, floors, objects and gets back to our ears with a very small delay in time. All those thousands(!) of reflections together make the reverb effect. The bigger the hall or room the longer the reverb sounds.

Reverb – level control

This slider controls the level of the Reverb signal going out of the Reverb FX.

Reverb – Time control

This slider controls the decay of the reverb effect. Higher settings give longer reverb tails.

Reverb – send controls (left and right)

These two sliders control the level of the dry signal going into the Reverb FX. they have a close relations with the Reverb level control on the left. Remember: under the Preferences tab you can set to link the two sliders by enabling the checkbox *Link left & right parameters*.

DELAY

Delay (or echo) is an effect similar to reverb, but the time the sounds needs to get back to our ears from walls, ceilings, floors, mountains(!) etc. is so long that we “hear” the silence in between. It is the effect of screaming in the mountains: after some time you hear your voice coming back from the mountain walls it reflected on.

In the early days of electronics this effect was created by recording the audio on a tape and playing it back from that same tape with a gap from about 200 ms to sometimes several seconds. Later on this effect could be simulated electronically and digitally. You can do nice rhythmical things with it!

Delay – level control

This slider determines the level of the delay signal going out of the Delay FX.

Delay – Time control

This slider dertermines the “gaps” between the dry signal and the delayed signal. It various from 0 to about 1000 milliseconds. With very small settings you can thicken up your sounds. With higher settings you can create rhythmical sounds.

Delay – Send controls (left and right)

These two sliders (L+R) determine how much of the dry signal will be fed into the Delay FX.

Delay – Feedback control

This slider determines how much of the Delay signal is fed back into the Delay FX. With higher settings it takes a longer time for the delay signal to fade out.

Delay – Filter control

This slider determines how much filtering will take place on the delay signal. With higher settings you can simulate old tape machines that lose high frequencies on the delay signal by their nature.

The filter is a 6 dB lowpass filter inserted in the feedback loop.

Delay – Delay into Reverb control

This slider determines how much of the Delay signal will be fed back into the Reverb FX. Set to 0 only the dry signal will go through the Reverb FX. Higher settings will have a reverb on the delay signal as well.

Delay – Delay line 1 level controls (left and right)

This slider determines the level of the main delay line whose delay time has been set with the *Delay Time* slider. So maximum delay times (1000 ms) will be made with this delay line.

Delay – Delay line 2 level controls (left and right)

This slider sets the level of a second delay line, whose time is derived from the *Delay time* setting. The delay time for delay line 2 is 1/3 of the time made with the *Delay time* setting. For instance, if the delay time of delay line 1 is about 750 ms, this delay line will produce a delay signal after 250 ms.

Delay – Delay line 3 level controls (left and right)

This slider sets the level of a second delay line, whose time is derived from the *Delay time* setting. The delay time for delay line 2 is 1/3 of the time made with the *Delay time* setting. For instance, if the delay time of delay line 1 is about 750 ms, this delay line will produce a delay signal after 500 ms.

EQUALIZER

This effect is actually a number of filters that control specific parts of the soundspectrum. With an equalizer you can enhance or push back certain frequency ranges like the bass frequencies, middle frequencies or high frequencies of a sound. It's a perfect effect to make a sound stand out in a mix of various sounds. Or to cut off some irritating frequencies in a sound.

It's a 4 band equalizer with gain and frequency controls and a bandwidth control for the two mid bands.

Note that you have a complete independent equalizer effect for both the left and right audio channel.

Equalizer – low gain control

This knob controls the level of the gain for the low frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – low frequency control (up to 1.25 KHz)

This knob controls the low frequency that can be level controlled by the low gain control.

Equalizer – mid 1 gain control

This knob controls the level of the gain for the medium 1 frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – mid 1 frequency control (up to 1.4 KHz)

This knob controls the medium 1 frequency that can be level controlled by the medium 1 gain control.

Equalizer – mid1 bw control

This knob controls the slope or bandwidth of the medium 1 frequency that can be set by the mid 1 frequency control. Low values give a small bandwidth (1/6 octave), high values give a broad bandwidth (3 octaves).

Equalizer – mid 2 gain control

This knob controls the level of the gain for the medium 2 frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – mid 2 frequency control (up to 1.4 KHz)

This knob controls the medium 2 frequency that can be level controlled by the medium 2 gain control.

Equalizer – mid2 bw control

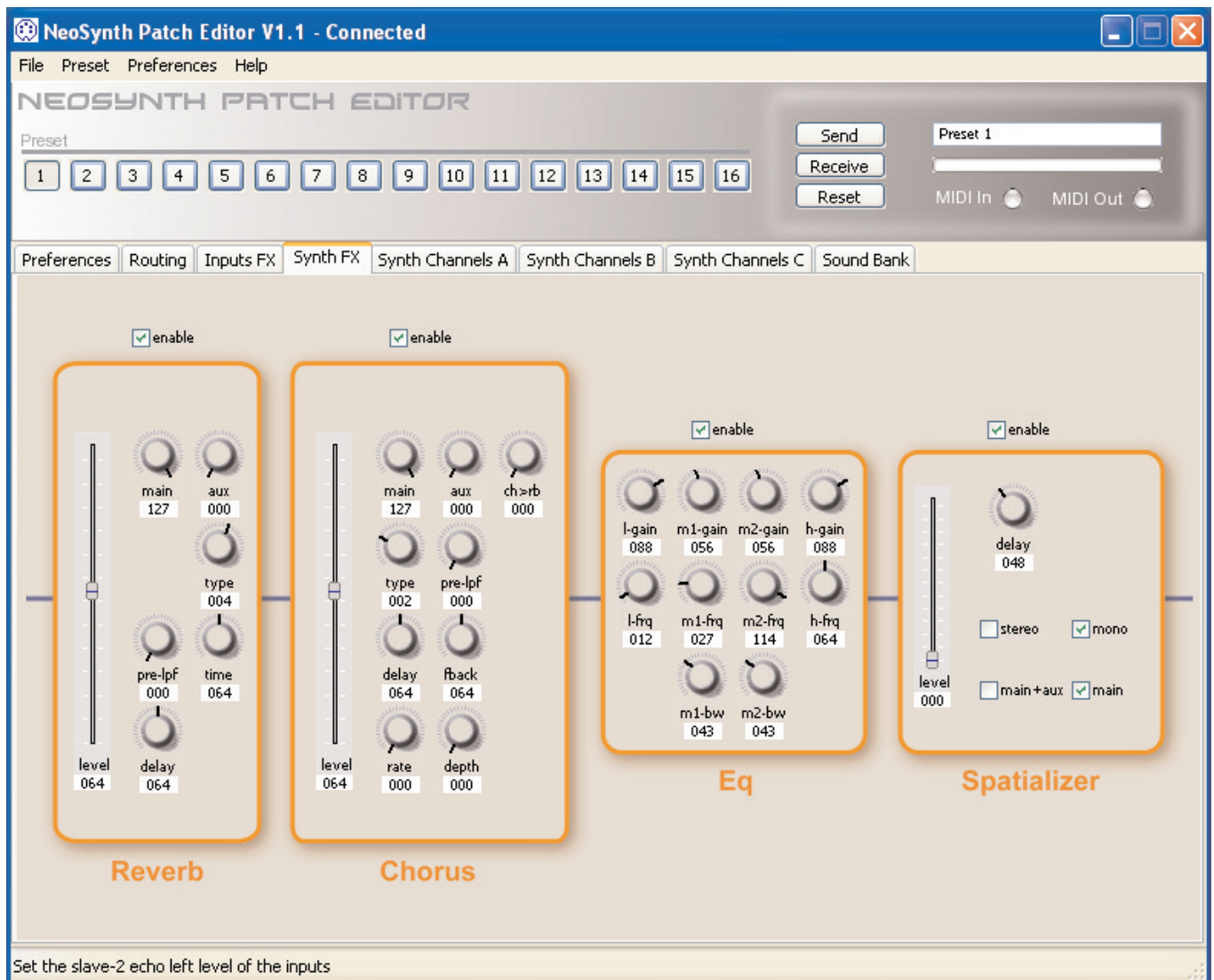
This knob controls the slope or bandwidth of the medium 2 frequency that can be set by the mid 2 frequency control. Low values give a small bandwidth (1/6 octave), high values give a broad bandwidth (3 octaves).

Equalizer – high gain control (up to 5.2 KHz)

This knob controls the level of the gain for the high frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – high frequency control

This knob controls the high frequency that can be level controlled by the high gain control.



Synth FX screen

In this screen you can make all the effects settings for the synthesizer channels. The effects are globally used for all 16 synthesizer channels. The provided effect blocks are different from the ones in the external audio path.

There is a stereo reverb, stereo chorus, a stereo equalizer and a so called spatializer available to sculpt your synthesizer sounds in detail. In this synth audio path effects section the controls are always combined controls for left and right

Let us take look at all the controls in this section.

First there are four checkboxes to enable/disable each effect. If you don't need one or more of the effects it is wise to turn them off, since that will increase polyphony of the synth module.

Enable Reverb

This checkbox enables/disables the Reverb effect.

Enable Chorus

This checkbox enables/disables the Delay effect.

Enable Eq

This checkbox enables/disables the Equalizer effect.

Enable Spatializer

This checkbox enables/disables the Spatializer effect.

REVERB

For a overall function of the reverb effect see the description at the Input FX section above.

The reverb controls here differs from the reverb controls in the external audio path effects section. It has more extended controls.

Reverb – level control

This slider controls the amount of dry signal going into the reverb effect.

Reverb – main level control

This knob controls the amount of reverb signal going to the main outputs.

Reverb – aux level control

This knob controls the amount of reverb signal going to the aux outputs.

Reverb – type control

This knob sets the type of the reverb. There are 8 settings:

0. Room 1
1. Room 2
2. Room 3
3. Hall 1
4. Hall 2
5. Plate
6. Delay
7. Pan Delay

Reverb – pre-low pass filter control

This knob controls the cutoff frequency of the signal that is going into the reverb effect.

Reverb – time control

This knob controls the time of the reverb tail. Low settings have a short reverb tail, high settings make a long reverb tail.

Reverb – delay control

This knob controls the delay time for the reverb types 6 and 7.

CHORUS

In simple terms the chorus effect thickens a sound by adding a slightly changed copy of the original to the original. The change is in the pitch of the copy. Because it is very little difference, our ears do not perceive the sound as out of tune. Parameters like delay and pitch modulation will add to this effect. Extreme settings can create real different sounds though.

Chorus – main level control

This knob controls the amount of chorus signal going to the main outputs.

Chorus – aux level control

This knob controls the amount of chorus signal going to the aux outputs.

Chorus – chorus into reverb level control

This knob controls the amount of chorus signal going back into the reverb effect.

Chorus – type control

This knob sets the type of chorus. There are 8 different types.

0. Chorus 1
1. Chorus 2
2. Chorus 3
3. Chorus 4
4. Feedback
5. Flanger
6. Short delay
7. Feedback delay

Chorus – pre-low pass filter control

This knob controls the cutoff frequency of the signal that is going into the chorus effect.

Chorus – delay control

This knob controls the delay time

Chorus – feedback control

This knob sets the amount of chorus signal that is fed back into the chorus effect.

Chorus – rate control

This knob controls the rate of the chorus effect.

Chorus – depth control

This knob controls the depth of the chorus effect.

EQUALIZER

This effect is actually a number of filters that control specific parts of the soundspectrum. With an equalizer you can enhance or push back certain frequency ranges like the bass frequencies, middle frequencies or high frequencies of a sound. It's a perfect effect to make a sound stand out in a mix of various sounds. Or to cut off some irritating frequencies in a sound.

It's a 4 band equalizer with gain and frequency controls and a bandwidth control for the two mid bands.

Note that you have a complete independent equalizer effect for both the left and right audio channel.

Equalizer – low gain control

This knob controls the level of the gain for the low frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – low frequency control (up to 1.25 KHz)

This knob controls the low frequency that can be level controlled by the low gain control.

Equalizer – mid 1 gain control

This knob controls the level of the gain for the medium 1 frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – mid 1 frequency control (up to 1.4 KHz)

This knob controls the medium 1 frequency that can be level controlled by the medium 1 gain control.

Equalizer – mid1 bw control

This knob controls the slope or bandwidth of the medium 1 frequency that can be set by the mid 1 frequency control. Low values give a small bandwidth (1/6 octave), high values give a broad bandwidth (3 octaves).

Equalizer – mid 2 gain control (up to 1.4 KHz)

This knob controls the level of the gain for the medium 2 frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – mid 2 frequency control

This knob controls the medium 2 frequency that can be level controlled by the medium 2 gain control.

Equalizer – mid2 bw control

This knob controls the slope or bandwidth of the medium 2 frequency that can be set by the mid 2 frequency control. Low values give a small bandwidth (1/6 octave), high values give a broad bandwidth (3 octaves).

Equalizer – high gain control (up to 5.2 KHz)

This knob controls the level of the gain for the high frequency. 0 = -12 dB, 127 = +12 dB.

Equalizer – high frequency control

This knob controls the high frequency that can be level controlled by the high gain control.

SPATIALIZER

This effect can enhance the “stereo feeling” of a sound or sounds. You can also use it with a 4 speaker setting when you use both the main outputs and the aux outputs together.

Spatializer – level control

This slider controls the amount of signal going into the spatializer effect.

Spatializer – Delay control

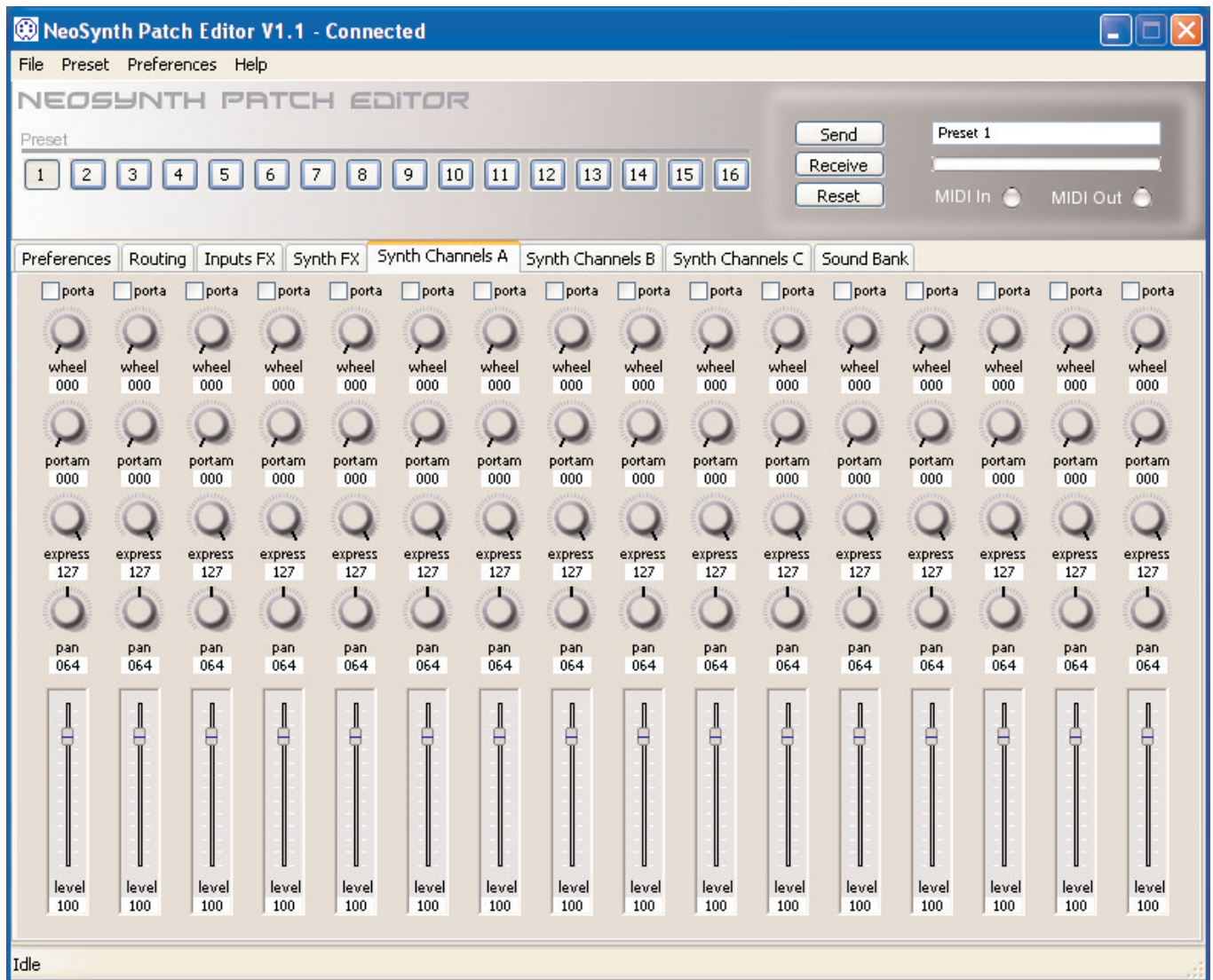
This control sets the amount of delay signal that creates the spatial effect. Higher settings give a more pronounced spatial effect.

Spatializer – stereo/mono checkboxes

These checkboxes determine if a stereo or mono signal goes into the spatializer effect.

Spatializer – main+aux/main checkbox

These checkboxes determine if the spatializer signal goes to the main outputs plus the aux outputs or only to the main outputs.



Synth channels A screen

In this first of three synth channels screens you can alter various parameters that will change a synthesizer sound. You can make these changes for each of the 16 individual synthesizer channels.

Synth channel A – portamento checkbox

With this checkbox you can turn the portamento on or off. Portamento is also called glide. It is an effect where the pitch of the sound 'glides' from one key to the other.

Synth channel A – wheel level control

This knob sets the modulation depth of the modulation wheel on your controller keyboard

Synth channel A – portamento control

This knob sets the portamento or glide rate, i.e. how fast the pitch glides from one to the other note.

Synth channel A – express level control

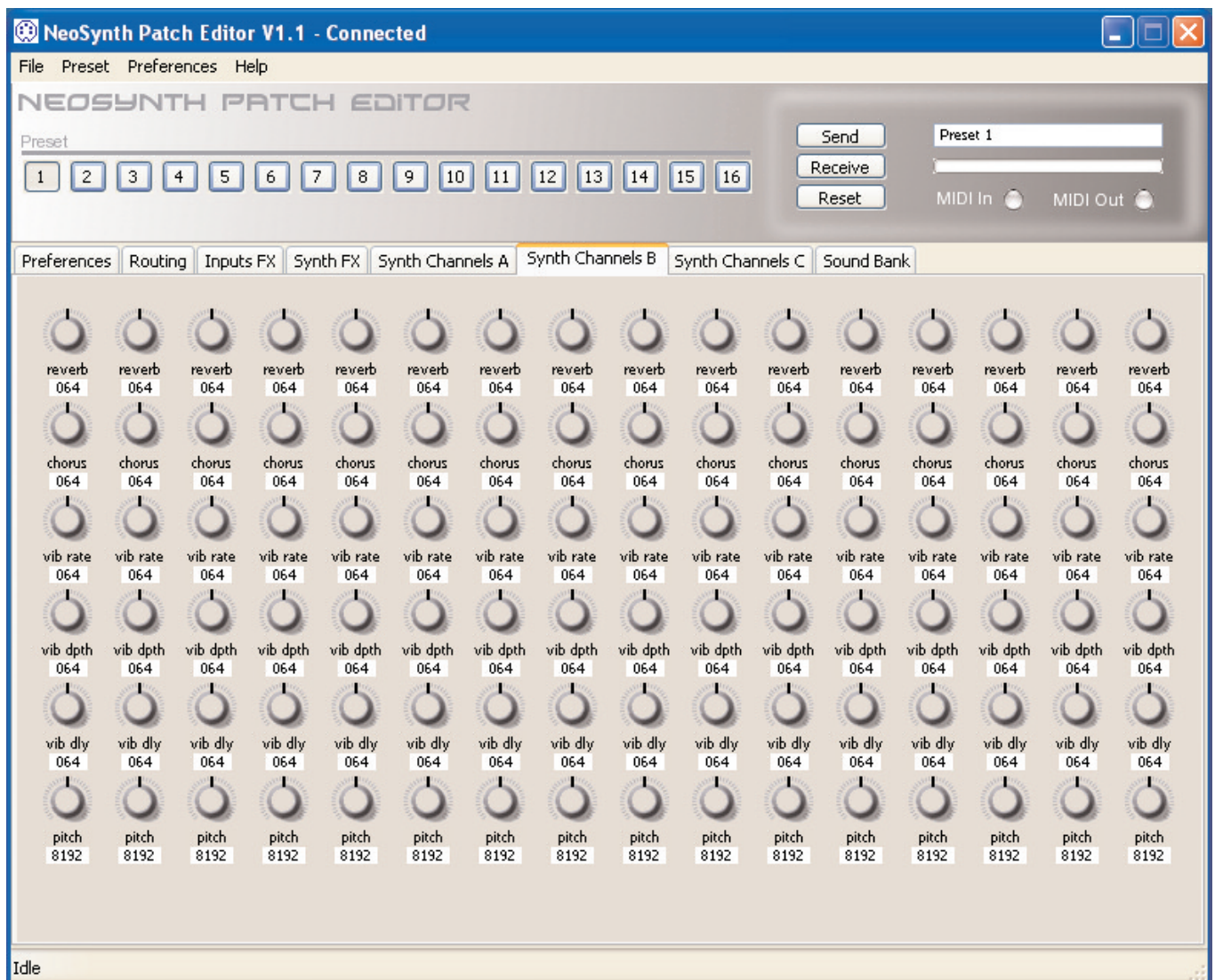
This knob sets the level of the expression pedal.

Synth channel A – panning control

This knob sets the panning of each individual synthesizer channel in the stereo field.

Synth channel A – level control

This slider controls the level of each individual synthesizer channel.



Synth channels B screen

In this second screen you can alter level settings for the various effects plus an additional effect: vibrato. Vibrato is an effect where you change the pitch of the original sound using a so called low frequency oscillator. It is used to simulate various real world instruments like flutes, where you make this effect with your lips and fingers, or on a string from a violin, by stretching the snare with your finger in a rhythmic way.

Synth channel B – reverb level control

This knob sets the amount of signal that is going into the reverb effect for each of the 16 individual synth channels.

Synth channel B – chorus level control

This knob sets the amount of signal that is going into the chorus effect for each of the 16 individual synth channels.

Synth channel B – vibrato rate control

This knob sets the rate of the vibrato for each of the 16 individual synth channels.

Synth channel B – vibrato depth control

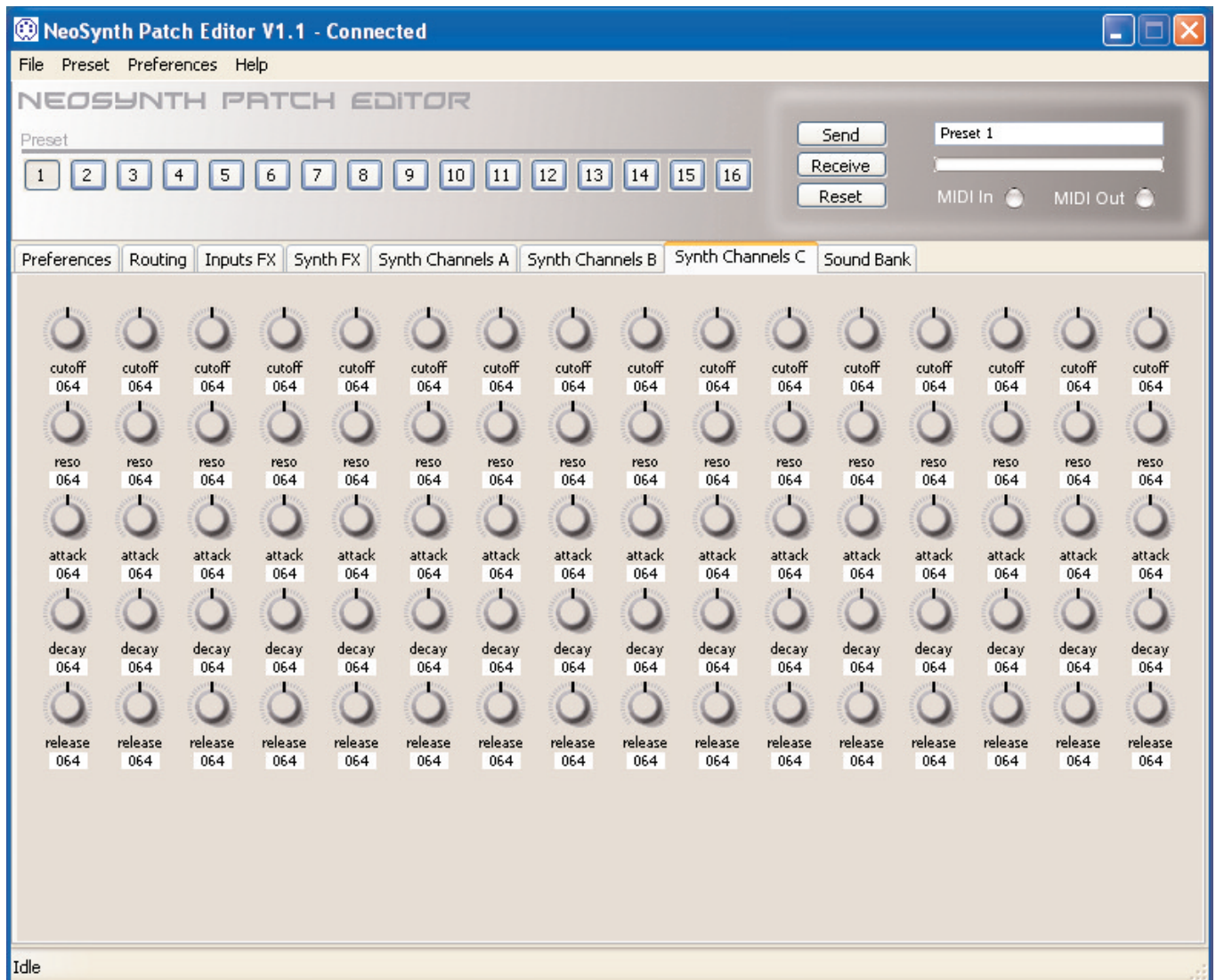
This knob controls the depth of the vibrato effect for each of the 16 individual synth channels.

Synth channel B – vibrato delay control

This knob sets the time before the vibrato effect is coming up after a key is pressed. Again you can set this for each of the 16 individual synth channels.

Synth channel B – pitch control

This knob sets the global pitch for each of the 16 individual synth channels.



Synth channels C screen

In this screen you can change the cutoff and resonance of the built-in low pass filter. Such a filter can have great effect on a sound by removing certain parts of the soundspectrum of that sound, in this case by filtering out high frequencies. The effect gets even greater by an extra parameter, the resonance control. With this control you enhance the frequencies around the the point from where frequencies are cut off.

Synth channel C – filter cutoff control

This control sets the cutoff value of the filter. The higher the value the brighter the sound.

Synth channel C – filter resonance control

This control sets the resonance level of the filter, the higher the value the more resonance you hear.

Synth channel C – amplifier attack control

The control sets the time it take for the level of the sound to reach it's maximum value. At zero the sound

will sound immediately at its maximum value, higher values makes the sound come up in level in a certain time.

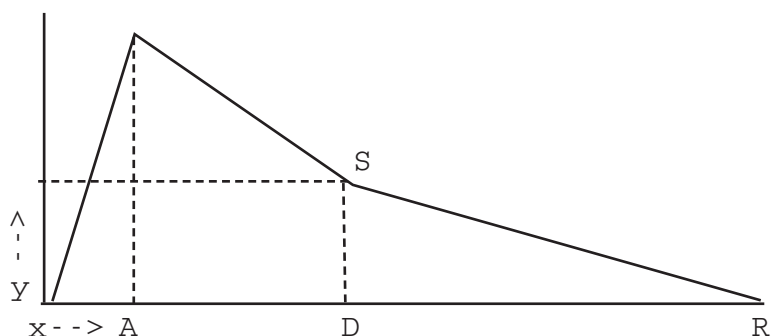
Synth channel C – amplifier decay control

Decay control sets the time a sound will go on while a key is pressed. Low values makes that a short time, the highest value will make the sound go on until you release the key.

Synth channel C – amplifier release control

This control sets the time a sound will go on after you have released the key. A low value will drop the sound level immediately while a high value will make the sound go on for some time after you released the key.

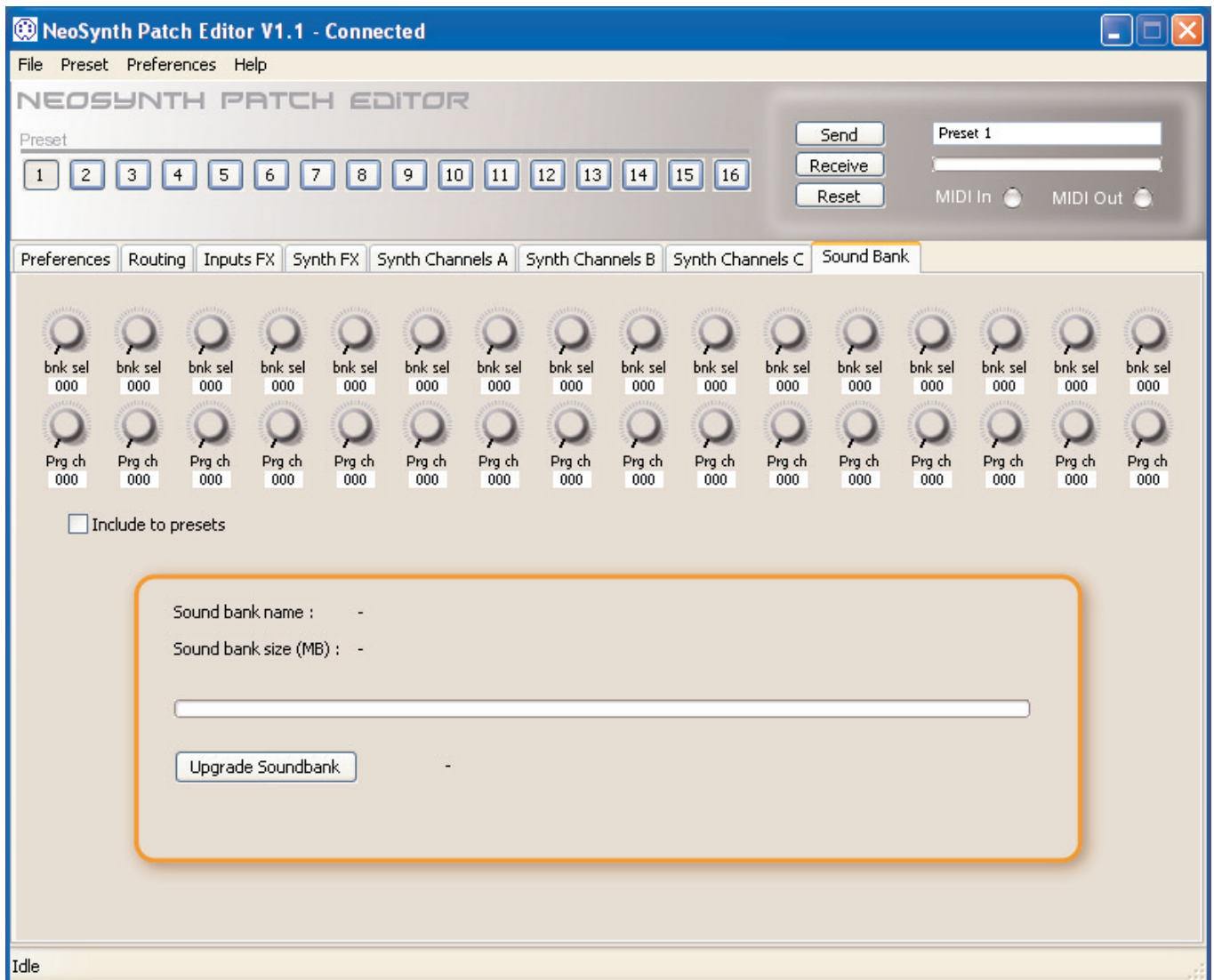
With the Attack, Decay and Release controls you “shape” the volume of the sound in time. These controls are very important. A pad or string sound needs slow attack and a longer release, while a piano or organ sound needs a fast attack and a slower release for instance.



Here you see a typical ADSR curve. On the x-axis time is represented, on the y-axis it's the amplitude of the volume of the sound.

The standard envelope form is ADSR, which starts with Attack time (A) from minimum level to maximum, falls back to Sustain level (S) with Decay (D) time. After key release with Release time (R) the signal will go back to 0 (if Sustain level was 0 nothing happens after Decay time has passed).

On the NeoSynth there is no sustain control and the sound falls in the release time back to zero after the decay time has passed.



Sound bank screen

In this screen you can make various settings for bank and program selection on the 16 MIDI channels. You can also upgrade a *sound* bank from this field. Beware that we are talking about two different types of banks here! The first control (bank select) is a controller to select a bank which contains a maximum of 128 programs (or instruments). The *upgrade sound bank* button refers to a *sound* bank which contains all the (multi)samples which provides the raw material for the synthesizer to process and create sound with. So a sound bank is a file and container for the (multi)samples which can be loaded into the NeoSynth. A bank is a container for 128 programs. A sound bank can contain 4 banks of 128 sounds for instance.

Sound bank – bank select control

With this control you can select various banks on the NeoSynth per MIDI channel. Each bank can contain a maximum of 128 programs.

Sound bank – program channel

With this control you can select the program for every midi channel within the chosen bank. There are a

maximum of 128 programs in a bank.

Sound bank – include to presets

This checkbox determines if the made settings for bank select and program channel will be included in the active preset when saved.

Sound bank – sound bank name

Here you can see the name of the sound bank that is going to be uploaded to the NeoSynth.

Sound bank – sound bank size (MB)

Here you can see the size of the sound bank that is going to be uploaded to the NeoSynth.,

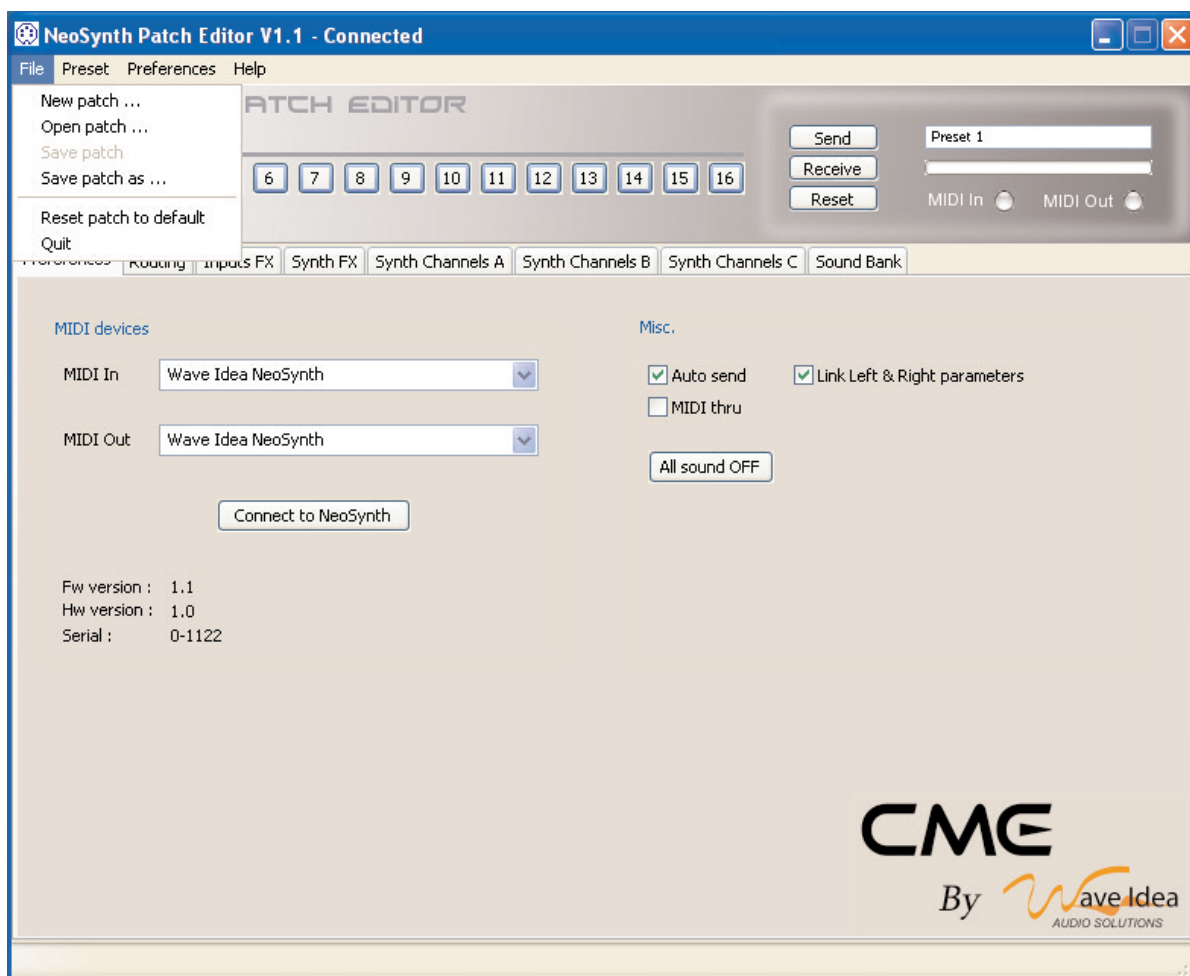
Sound bank – upgrade sound bank

This knob starts the upload of the sound bank to the NeoSynth.

The menu items of the patch editor

In the main menu bar there are some global parameters like saving, opening, connecting and other features. We will shortly describe them here, since most of them are pretty obvious.

FILE



File – New patch

This will create a new patch. A patch is a complete setting of 16 presets which can be made with the NeoSynth patch editor. You can save these patches on your computer.

File – Open patch

With this command you can open a saved patch.

File – Save patch

With this command you can save a newly made patch on your computer.

File – Save patch as

With this command you can save an existing patch with a different name, to be able to keep the original patch.

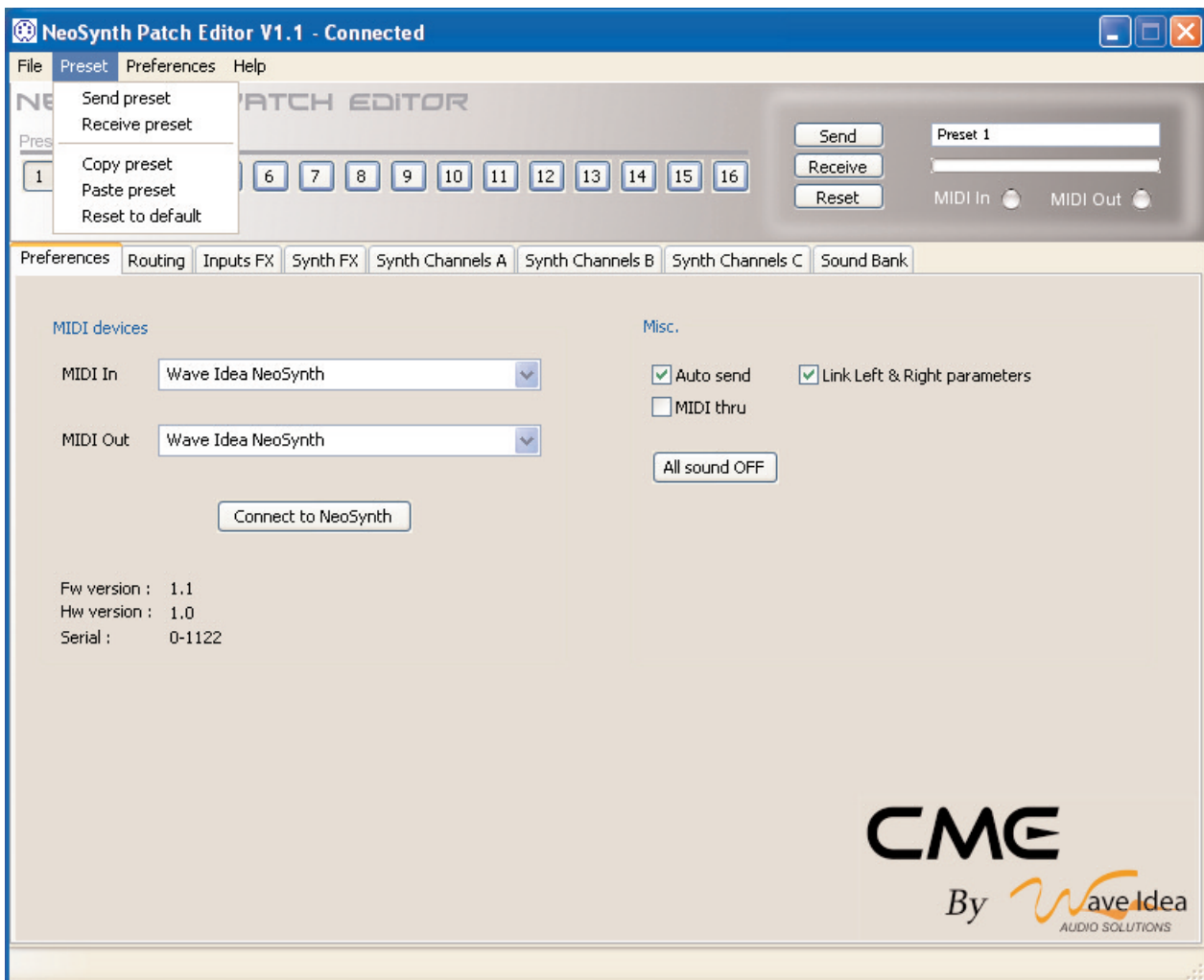
File – Reset patch to default

With this command you can reset all 16 presets to default values.

File – Quit

This command quits the patch editor software.

PRESET



Preset – Send

A preset is a complete setting for the NeoSynth, including the synthchannel settings etc. With this command you can send a preset to the NeoSynth (remember, in the preferences tab you can choose to automatically send every change you make in the software, including sending presets!)

Preset – Receive

With this command you can request the preset settings that are in the NeoSynth.

Preset – Copy

With this command you can make copy of the preset settings and paste it into another preset with the pre-set paste command.

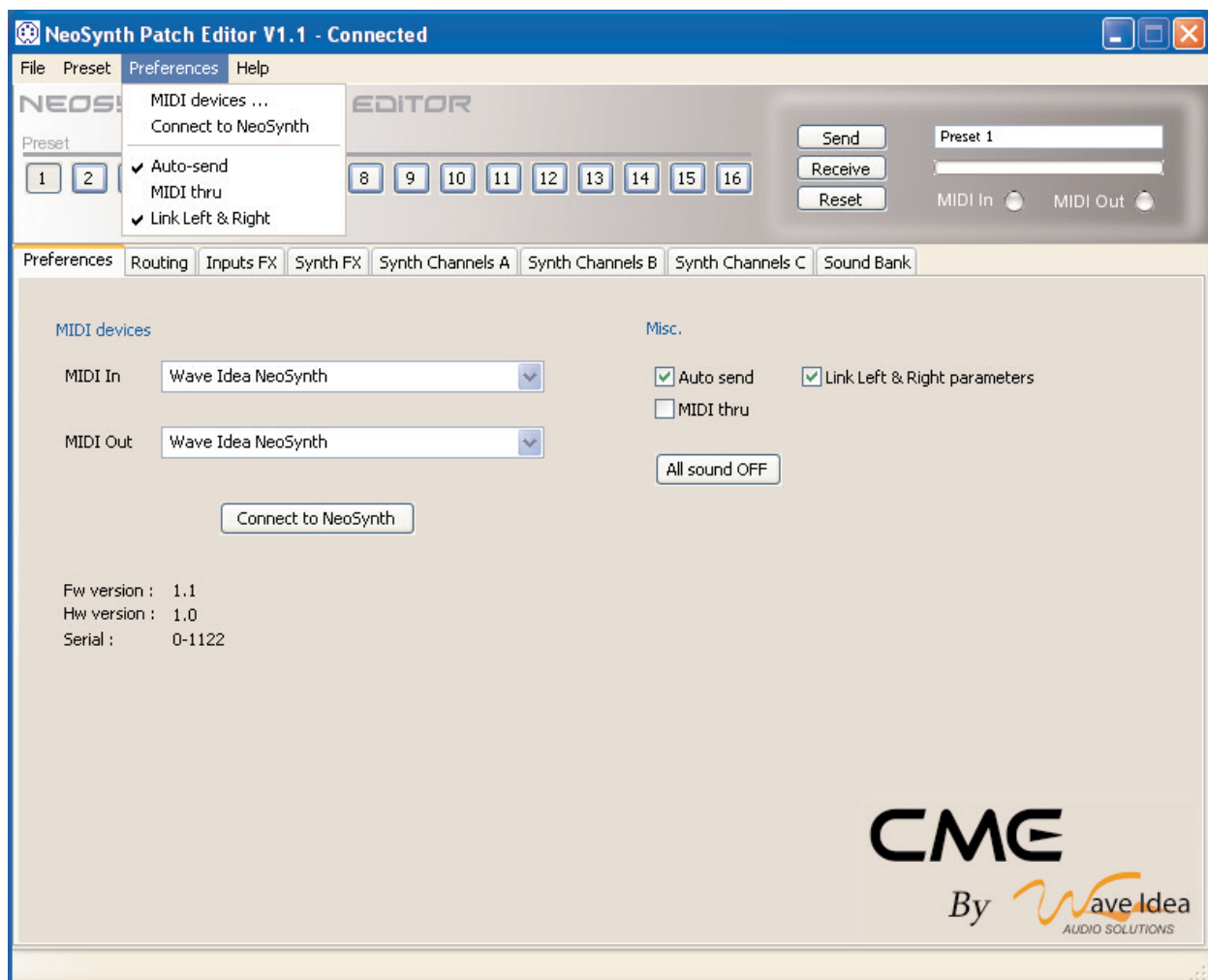
Preset – Paste

With this command you can paste a copied preset into another preset.

Preset – Reset to default

This command resets the active preset in the software to default values.

PREFERENCES



MIDI devices – MIDI In

In this pop-up screen you can choose the available MIDI device to send preset data to, in our case the NeoSynth. Midi in & out selections are saved so that are retrieved next time you start the software.

MIDI devices – MIDI Out

In this pop-up screen you can choose the available MIDI device to receive preset data from, in our case the NeoSynth. Midi in & out selections are saved so that are retrieved next time you start the software.

MIDI devices - Connect to NeoSynth

Activating this line will make a connection with the NeoSynth to show you the firmware version, the hardware version and the serial number (under the knob). As soon as you see that info appear you know that the connection has been made with the Neosynth.

Misc. – Auto send

When selected, the software editor will send every parameter change made in the editor immediately. When unselected you will have to use the "Send" button in the upper screen to send the whole preset to Neosynth. Also you can right click on a knob or any other control to send it individually. (On OSX control-click).

Misc. – MIDI thru

When the box is checked, all incoming midi data in the software will be forwarded to the MIDI out, so this has to be used with care since it can result in a midi loop (a confirmation box appears in the software mentioning this possible midi loop).

The midi thru can be used with a midi file player connected to the soft input. This way you can change the sounds by turning knobs in the software while the midi song is playing.

Misc. – Link Left & Right parameters

With this one selected all parameters that have a left and right version are linked, meaning if you change one of them, the other one will change too with the same value. When unselected you can make complete individual settings for the left and right version of a parameter.

HELP

choosing this menu item you will get into a help file that basically contains the same info as this manual as far as it concerns the use of the patch editor software.

The NeoSynth features

The Neosynth from Waveldea is an expansion card suitable for the CME VX and UF keyboard range.

- It is a MIDI/USB expander;
- It has up to 124 voice of polyphony;
- There are built-in effect engines for both the input audio path as well as the synthesizer audio path;
- Effects are Reverb, Delay, Equalizer, Chorus, Spatializer;
- Each sound bank can contain up to 64 MB of sounds;
- Soundbanks are updatable from a SD card. The software editor (both Mac and Windows are available) shows the progress of this;
- Waveldea has various sound banks available for all kinds of musical styles;
- USB is MIDI class compliant (no driver needed);
- The audio paths are 24 bits / 48 KHz;
- Main stereo audio outputs (24 bits DA convertors, DAC output voltage is 3.0V peak to peak);
- Auxilliary stereo audio outputs (24 bits DA convertors, DAC output voltage is 3.0V peak to peak);
- Stereo Headphones output. 50 mW at 16 Ohms;
- Analog stereo audio input (24 bits A/D converters);
- S/PDIF stereo audio output;
- Large MIDI implementation;
- Editable by a software patch editor.

MIDI implementation of the NeoSynth

<i>NRPN (High Low)</i>	<i>Description</i>		<i>Power-up default</i>
GENERAL			
3755h	Effects on/off	See paragraph 1-11 for details	37h
3756h	Input modules on/off	See paragraph 1-12 for details	01h
3707h	Master Volume	0 to 7Fh	7Fh
MIDI			
3708h	Midi Equalizer Low band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3709h	Midi Equalizer Med1 band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
370Ah	Midi Equalizer Med2 band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
370Bh	Midi Equalizer High band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
370Ch	Midi Equalizer Low band freq	0 = 0Hz to 7Fh = 1.25Khz	
370Dh	Midi Equalizer Med1 band freq	0 = 0Hz to 7Fh = 1.4Khz	
370Eh	Midi Equalizer Med2 band freq	0 = 0Hz to 7Fh = 1.4Khz	
370Fh	Midi Equalizer High band freq	0 = 0Hz to 7Fh = 5.2Khz	
3710h	Midi Equalizer Med1 band width	0 to 7Fh	
3711h	Midi Equalizer Med2 band width	0 to 7Fh	
3713h	Midi Ambience Preset		
3714h	Midi Spatializer effect volume	0 = no effect, 7Fh = maximum effect	
3715h	Midi Spatializer effect delay	0 = 0 to 7Fh = 13.65ms	
3716h	Midi Spatializer effect input	0 = stereo 7Fh = mono	
3717h	Midi Spatializer effect output mode	0 = 2 outputs mode 7Fh = 4 outputs mode	
3718h	Midi Master volume	0 to 7Fh	7Fh
3719h	Midi Master pan	0 = left, 40h = center, 7Fh = right	40h
371Ah	General Midi reverb send	0 = no send, 40h = default send, 7Fh = max	40h
371Bh	General Midi chorus send	0 = no send, 40h = default send, 7Fh = max	40h
INPUTS (see paragraph 1.2 for details)			
371Ch	Input1 delay send		
371Dh	Input2 delay send		
371Eh	Input1 reverb send		
371Fh	Input2 reverb send		
3720h	Input1 volume	0 to 7Fh	7Fh
3721h	Input2 volume	0 to 7Fh	00h
3722h	Input1 pan	0 = hard left, 40h = center, 7Fh = hard right	40h
3723h	Input2 pan	0 = hard left, 40h = center, 7Fh = hard right	40h
3725h	Input1 Equalizer Presets	0 to 2	
3726h	Input1 Equalizer Low band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3727h	Input1 Equalizer Med1 band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3728h	Input1 Equalizer Med2 band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3729h	Input1 Equalizer High band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
372Ah	Input1 Equalizer Low band freq	0 = 0Hz to 7Fh = 1.25Khz	
372Bh	Input1 Equalizer Med1 band freq	0 = 0Hz to 7Fh = 1.4Khz	
372Ch	Input1 Equalizer Med2 band freq	0 = 0Hz to 7Fh = 1.4Khz	
372Dh	Input1 Equalizer High band freq	0 = 0Hz to 7Fh = 5.2Khz	

372Eh	Input1 Equalizer Med1 band width	0 to 7Fh	
372Fh	Input1 Equalizer Med2 band width	0 to 7Fh	
3730h	Input2 Equalizer Presets	0 to 2	
3731h	Input2 Equalizer Low band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3732h	Input2 Equalizer Med1 band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3733h	Input2 Equalizer Med2 band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3734h	Input2 Equalizer High band gain	0 = -12dB, 40h = 0dB, 7Fh = +12dB	
3735h	Input2 Equalizer Low band freq	0 = 0Hz to 7Fh = 1.25Khz	
3736h	Input2 Equalizer Med1 band freq	0 = 0Hz to 7Fh = 1.4Khz	
3737h	Input2 Equalizer Med2 band freq	0 = 0Hz to 7Fh = 1.4Khz	
3738h	Input2 Equalizer High band freq	0 = 0Hz to 7Fh = 5.2Khz	
3739h	Input2 Equalizer Med1 band width	0 to 7Fh	
373Ah	Input2 Equalizer Med2 band width	0 to 7Fh	
373Bh	Input reverb presets	0 to 7	
373Ch	Input reverb volume	0 to 7Fh	
373Eh	Input reverb time	0 to 7Fh	
3740h	Input1&2 input volume	0 to 7Fh	7Fh
3741h	2nd stereo audio in input volume	0 to 7Fh	7Fh
3743h	Input delay presets	0 to 2	00h
3744h	Input delay level	0 to 7Fh	30h
3745h	Input delay time	0 = shortest to 7Fh = longest	3Bh
3746h	Input delay feed-back	0 = no feed back to 7Fh = maximum feedback	34h
3747h	Input delay filter	0 = open to 7Fh = close	08h
3749h	Slave1 delay right volume	0 to 7Fh	00h
374Ah	Slave1 delay left volume	0 to 7Fh	00h
374Bh	Slave2 delay right volume	0 to 7Fh	00h
374Ch	Slave2 delay left volume	0 to 7Fh	00h
374Dh	Master delay right volume	0 to 7Fh	78h
374Eh	Master delay left volume left	0 to 7Fh	78h
374Fh	Delay send to reverb		
3750h	Input module mixing to Main Outputs	0 to 7Fh	7Fh
3751h	Input module mixing to Auxiliary Output	0 to 7Fh	0h

4 OUTPUTS SETTINGS (see paragraph 1.13 for details)

38xxh	Midi channel master or auxiliary output	0 = master or 7Fh = auxiliary, xxh = midi channel (0 to 1Fh)	0
3828h	Reverb master volume	0 to 7Fh	7Fh
3829h	Reverb auxiliary volume	0 to 7Fh	00h
3830h	Chorus master volume	0 to 7Fh	7Fh
3831h	Chorus auxiliary volume	0 to 7Fh	00h

1.11 Nrpn 03755h: Effects on/off

Midi message:

control 99 = 55 (37h), control 98 = 85 (55h), control 6 = vv

Midi message code (in hexadecimal):

B0h 63h 37h, B0h 62h 55h, B0h 06h vv

Each bit of vv byte is used for selecting an effect ON or OFF as following:

7	6	5	4	3	2	1	0
0	0	REV	CHR	0	3D	EQ2	EQ1

REV bit = 1: Reverb ON

CHR bit = 1: Chorus ON

3D bit = 1: Spatializer ON

EQ2, EQ1 bits: Equalizer

EQ2 = 0, EQ1 = 0: equalizer off

EQ2 = 1, EQ1 = 0: 2 band equalizer

EQ2 = 1, EQ1 = 1: 4 band equalizer

Default power-on values are:

Rev = 1, Chr = 1 (Reverb/Chorus ON)

3D = 1 (Spatializer ON)

EQ2 = 1, EQ1 = 1 (4 Band equalizer)

1.12 Nrpn 03756h: Input modules on/off

Midi message:

control 99 = 55 (37h), control 98 = 86 (56h), control 6 = vv

Midi message code (in hexadecimal):

B0h 63h 37h, B0h 62h 56h, B0h 06h vv

Each bit of vv byte is used for selecting a Input module ON or OFF as following:

7	6	5	4	3	2	1	0
0	0	REV	0	0	EQU	ECH	INPUT

INPUT bit = 1: Input1, Input2 ON

ECH bit = 1: Stereo delay on inputs ON (set only if using 128Kx16 RAM, always 0 if using 64Kx16 RAM)

EQ bit = 1: Input1 and 2 Equalizer ON

- bit = 1: not implemented

- bit = 1: not implemented

REV bit = 1: Input1 and 2 Reverb ON (set only if using 128Kx16 RAM, always 0 if using 64Kx16 RAM)

Default power on values are:

Rev = 0, Equ = 0, Ech = 0, Input = 1

1.13 Midi output on 4 outputs

A) Each midi channel can be output to master **or** auxiliary outputs using nrpn 3800h till 380Fh:

nrpn 38xxh = 0h: midi channel xxh is master output

nrpn 38xxh = 7Fh: midi channel xxh is auxiliary output

Midi message:

control 99 = 56 (38h)

control 98 = xx:

xx = 0 select midi channel 0

xx = 1 selects midi channel 1

...

xx = 15 selects midi channel 15

control 6 = 0 (master) or 127 (auxiliary)

Midi message code (in hexadecimal):

B0h 63h 38h, B0h 62h xxh, B0h 06h vv

Default value = 0 (master)

Note

Nrpn 3820h assigns all midi channels of first port (midi channels 0 to Fh).

Nrpn 3821h assigns all midi channels of second port (midi channels 10h to 1Fh)

nrpn 3820h(3821h) = 0h: all midi channels of first (second) port are master outputs

nrpn 3820h(3821h) = 07Fh: all midi channels of first (second) port are auxiliary outputs

Midi message:

control 99 = 56 (38h), control 98 = 32 (33) (20h,21h), control 6 = vv (0 or 127)

Midi message code (in hexadecimal):

B0h 63h 38h, B0h 62h 20h (21h), B0h 06h vv

B) Reverb and Chorus can be simultaneously output to master **and auxiliary outputs:**

nrpn 3828h = reverb master output volume

Midi message:

control 99 = 56 (38h), control 98 = 40 (28h), control 6 = vv

Midi message code (in hexadecimal):

B0h 63h 38h, B0h 62h 28h, B0h 06h vv

vv in range 0 (no sound) to 127 (maximum)

Default value = 127

nrpn 3829h = reverb auxiliary output volume

Midi message:

control 99 = 56 (38h), control 98 = 41 (29h), control 6 = svv

Midi message code (in hexadecimal):

B0h 63h 38h, B0h 62h 29h, B0h 06h vv

vv in range 0 (no sound) to 127 (maximum)

Default value = 0

nrpn 3830h = chorus master output volume

Midi message:

control 99 = 56 (38h), control 98 = 48 (30h), control 6 = vv

Midi message code (in hexadecimal):

B0h 63h 38h, B0h 62h 30h, B0h 06h vv

vv in range 0 (no sound) to 127 (maximum)

Default value = 127

nrpn 3831h = chorus auxiliary output volume*Midi message:*

control 99 = 56 (38h), control 98 = 49 (31h), control 6 = vv

Midi message code (in hexadecimal):

B0h 63h 38h, B0h 62h 31h, B0h 06h vv

vv in range 0 (no sound) to 127 (maximum)

Default value = 0

Table 3 Input Volume and Pan

<i>Nrpn # High Low</i>	<i>Midi Message</i>	<i>Midi Code (Hexadecimal)</i>	<i>Description</i>	<i>Default Value</i>
3750h	Control 99 = 55 Control 98 = 80 Control 6 = vv	B0h 63h 37h B0h 62h 50h B0h 06h vvh	Input Module Mixing to Main Outputs vv = 0 to 127	127
3751h	Control 99 = 55 Control 98 = 81 Control 6 = vv	B0h 63h 37h B0h 62h 51h B0h 06h vvh	Input Module Mixing to Auxiliary Output vv = 0 to 127	0
3720h	Control 99 = 55 Control 98 = 32 Control 6 = vv	B0h 63h 37h B0h 62h 20h B0h 06h vvh	Input 1 volume vv = 0 to 127	127
3721h	Control 99 = 55 Control 98 = 33 Control 6 = vv	B0h 63h 37h B0h 62h 21h B0h 06h vvh	Input 2 volume vv = 0 to 127	0
3722h	Control 99 = 55 Control 98 = 34 Control 6 = vv	B0h 63h 37h B0h 62h 22h B0h 06h vvh	Input 1 pan vv = 0 to 127: 00 = all left, 64 = center, 127 = all right	64
3723h	Control 99 = 55 Control 98 = 35 Control 6 = vv	B0h 63h 37h B0h 62h 23h B0h 06h vvh	Input 2 pan vv = 0 to 127: 00 = all left, 64 = center, 127 = all right	64

Table 4 Input Equalizer

<i>Nrpn # High Low</i>	<i>Midi Message</i>	<i>Midi Code (Hexadecimal)</i>	<i>Description</i>
<i>INPUT 1 EQUALIZER</i>			
3725h	Control 99 = 55 Control 98 = 37 Control 6 = vv	B0h 63h 37h B0h 62h 25h B0h 06h vvh	Input Equalizer presets vv = 0: preset 1 vv = 1: preset 2 vv = 2: preset 3

3726h	Control 99 = 55 Control 98 = 38 Control 6 = vv	B0h 63h 37h B0h 62h 26h B0h 06h vvh	Low band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3727h	Control 99 = 55 Control 98 = 39 Control 6 = vv	B0h 63h 37h B0h 62h 27h B0h 06h vvh	Medium 1 band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3728h	Control 99 = 55 Control 98 = 40 Control 6 = vv	B0h 63h 37h B0h 62h 28h B0h 06h vvh	Medium 2 band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3729h	Control 99 = 55 Control 98 = 41 Control 6 = vv	B0h 63h 37h B0h 62h 29h B0h 06h vvh	High band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
372Ah	Control 99 = 55 Control 98 = 42 Control 6 = vv	B0h 63h 37h B0h 62h 2Ah B0h 06h vvh	Low band frequency vv = 0 to 127 (frequency at -3dB): 16 = 152Hz, 32 = 305Hz, 64 = 610Hz, 127 = 1.25Khz
372Bh	Control 99 = 55 Control 98 = 43 Control 6 = vv	B0h 63h 37h B0h 62h 2Bh B0h 06h vvh	Medium 1 band frequency vv = 0 to 127 (center frequency): 16 = 175Hz, 32 = 350Hz, 64 = 700Hz, 127 = 1.4Khz
372Ch	Control 99 = 55 Control 98 = 44 Control 6 = vv	B0h 63h 37h B0h 62h 2Ch B0h 06h vvh	Medium 2 band frequency vv = 0 to 127 (center frequency): 16 = 175Hz, 32 = 350Hz, 64 = 700Hz, 127 = 1.4Khz
372Dh	Control 99 = 55 Control 98 = 45 Control 6 = vv	B0h 63h 37h B0h 62h 2Dh B0h 06h vvh	High band frequency vv = 0 to 127 (frequency at -3dB): 16 = 670Hz, 32 = 1.3Khz, 64 = 2.6Khz, 127 = 5.2Khz
372Eh	Control 99 = 55 Control 98 = 46 Control 6 = vv	B0h 63h 37h B0h 62h 2Eh B0h 06h vvh	Medium 1 band width vv = 0 to 127 (band width at -3dB): 5 = 1/6 octave, 7 = 1/4 octave, 10 = 1/3 octave, 15 = 1/2 octave, 22 = 3/4 octave, 30 = 1 octave, 46 = 3/2 octaves, 64 = 2 octaves, 107 = 3 octaves
372Fh	Control 99 = 55 Control 98 = 47 Control 6 = vv	B0h 63h 37h B0h 62h 2Fh B0h 06h vvh	Medium 2 band width vv = 0 to 127 (band width at -3dB): 5 = 1/6 octave, 7 = 1/4 octave, 10 = 1/3 octave, 15 = 1/2 octave, 22 = 3/4 octave, 30 = 1 octave, 46 = 3/2 octaves, 64 = 2 octaves, 107 = 3 octaves

INPUT 2 EQUALIZER

3730h	Control 99 = 55 Control 98 = 48 Control 6 = vv	B0h 63h 37h B0h 62h 30h B0h 06h vvh	Input 2 Equalizer presets vv = 0: preset 1 vv = 1: preset 2 vv = 2: preset 3
-------	------------------------------------------------------	-------------------------------------------	---------------------------------------------------------------------------------------

3731h	Control 99 = 55 Control 98 = 49 Control 6 = vv	B0h 63h 37h B0h 62h 31h B0h 06h vvh	Low band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3732h	Control 99 = 55 Control 98 = 50 Control 6 = vv	B0h 63h 37h B0h 62h 32h B0h 06h vvh	Medium 1 band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3733h	Control 99 = 55 Control 98 = 51 Control 6 = vv	B0h 63h 37h B0h 62h 33h B0h 06h vvh	Medium 2 band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3734h	Control 99 = 55 Control 98 = 52 Control 6 = vv	B0h 63h 37h B0h 06h vvh	High band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3735h	Control 99 = 55 Control 98 = 53 Control 6 = vv	B0h 63h 37h B0h 62h 35h B0h 06h vvh	Low band frequency vv = 0 to 127 (frequency at -3dB): 16 = 152Hz, 32 = 305Hz, 64 = 610Hz, 127 = 1.25Khz
3736h	Control 99 = 55 Control 98 = 54 Control 6 = vv	B0h 63h 37h B0h 62h 36h B0h 06h vvh	Medium 1 band frequency vv = 0 to 127 (center frequency): 16 = 175Hz, 32 = 350Hz, 64 = 700Hz, 127 = 1.4Khz
3737h	Control 99 = 55 Control 98 = 55 Control 6 = vv	B0h 63h 37h B0h 62h 37h B0h 06h vvh	Medium 2 band frequency vv = 0 to 127 (center frequency): 16 = 175Hz, 32 = 350Hz, 64 = 700Hz, 127 = 1.4Khz
3738h	Control 99 = 55 Control 98 = 56 Control 6 = vv	B0h 63h 37h B0h 62h 38h B0h 06h vvh	High band frequency vv = 0 to 127 (frequency at -3dB): 16 = 670Hz, 32 = 1.3Khz, 64 = 2.6Khz, 127 = 5.2Khz
3739h	Control 99 = 55 Control 98 = 57 Control 6 = vv	B0h 63h 37h B0h 62h 39h B0h 06h vvh	Medium 1 band width vv = 0 to 127 (band width at -3dB): 5 = 1/6 octave, 7 = 1/4 octave, 10 = 1/3 octave, 15 = 1/2 octave, 22 = 3/4 octave, 30 = 1 octave, 46 = 3/2 octaves, 64 = 2 octaves, 107 = 3 octaves
373Ah	Control 99 = 55 Control 98 = 58 Control 6 = vv	B0h 63h 37h B0h 62h 3Ah B0h 06h vvh	Medium 2 band width vv = 0 to 127 (band width at -3dB): 5 = 1/6 octave, 7 = 1/4 octave, 10 = 1/3 octave, 15 = 1/2 octave, 22 = 3/4 octave, 30 = 1 octave, 46 = 3/2 octaves, 64 = 2 octaves, 107 = 3 octaves

Table 5 Input Delay

<i>Nrpn # High Low</i>	<i>Midi Message</i>	<i>Midi Code (Hexadecimal)</i>	<i>Description</i>
371Ch	Control 99 = 55 Control 98 = 28 Control 6 = vv	B0h 63h 37h B0h 62h 1Ch B0h 06h vvh	Input 1 send to delay vv = 0 to 127
371Dh	Control 99 = 55 Control 98 = 29 Control 6 = vv	B0h 63h 37h B0h 62h 1Dh B0h 06h vvh	Input 2 send to delay vv = 0 to 127
3743h	Control 99 = 55 Control 98 = 67 Control 6 = vv	B0h 63h 37h B0h 62h 43h B0h 06h vvh	Delay presets vv = 0: Mono Delay vv = 1: Stereo Delay vv = 2: Triple Delay
3744h	Control 99 = 55 Control 98 = 68 Control 6 = vv	B0h 63h 37h B0h 62h 44h B0h 06h vvh	Delay level vv = 0 to 127
3745h	Control 99 = 55 Control 98 = 69 Control 6 = vv	B0h 63h 37h B0h 62h 45h B0h 06h vvh	Delay time vv = 0 (min = 0) to 127 (max = 446ms), linear scale
3746h	Control 99 = 55 Control 98 = 70 Control 6 = vv	B0h 63h 37h B0h 62h 46h B0h 06h vvh	Delay Feedback vv = 0 to 127
3747h	Control 99 = 55 Control 98 = 71 Control 6 = vv	B0h 63h 37h B0h 62h 47h B0h 06h vvh	Delay Filter Delay Filter vv: 0 = filter open to 127 = filter close Filter is a 6dB low pass filter inserted in feedback loop
3749h	Control 99 = 55 Control 98 = 73 Control 6 = vv	B0h 63h 37h B0h 62h 49h B0h 06h vvh	Slave1 Delay right volume vv = 0 to 127
374Ah	Control 99 = 55 Control 98 = 74 Control 6 = vv	B0h 63h 37h B0h 62h 4Ah B0h 06h vvh	Slave1 Delay left volume vv = 0 to 127
374Bh	Control 99 = 55 Control 98 = 75 Control 6 = vv	B0h 63h 37h B0h 62h 4Bh B0h 06h vvh	Slave2 Delay right volume vv = 0 to 127
374Ch	Control 99 = 55 Control 98 = 76 Control 6 = vv	B0h 63h 37h B0h 62h 4Ch B0h 06h vvh	Slave2 Delay left volume vv = 0 to 127

374Dh	Control 99 = 55 Control 98 = 77 Control 6 = vv	B0h 63h 37h B0h 62h 4Dh B0h 06h vvh	Master Delay right volume vv = 0 to 127
374Eh	Control 99 = 55 Control 98 = 78 Control 6 = vv	B0h 63h 37h B0h 62h 4Eh B0h 06h vvh	Master Delay left volume vv = 0 to 127
374Fh	Control 99 = 55 Control 98 = 79 Control 6 = vv	B0h 63h 37h B0h 62h 4Fh B0h 06h vvh	Delay send to Reverb vv = 0 to 127

Delay presets

Preset #	Preset NAME	Level	Time	Feedback	Filter	Slave1		Slave2		Master	
						Left	Right	Left	Right	Left	Right
0	Mono Delay	48	59	52	8	0	0	0	120	120	
1	Stereo Delay	48	70	52	8	120	103	0	0	103	120
2	Triple Delay	48	80	70	8	120	103	103	120	112	112

Nrpn # High Low	Midi Message	Midi Code (Hexadecimal)	Description
371Eh	Control 99 = 55 Control 98 = 30 Control 6 = vv	B0h 63h 37h B0h 62h 1Eh B0h 06h vvh	Input 1 reverb send vv = 0 to 127
371Fh	Control 99 = 55 Control 98 = 31 Control 6 = vv	B0h 63h 37h B0h 62h 1Fh B0h 06h vvh	Input 2 reverb send vv = 0 to 127
373Bh	Control 99 = 55 Control 98 = 59 Control 6 = vv	B0h 63h 37h B0h 62h 3Bh B0h 06h vvh	Reverb preset: vv = 0 to 7 0, 1, 2: room 1, room 2, room 3 3, 4, 5: hall 1, hall 2, hall 3 7, 8: cathedral 1, cathedral 2
373Ch	Control 99 = 55 Control 98 = 60 Control 6 = vv	B0h 63h 37h B0h 62h 3Ch B0h 06h vvh	Reverb volume: vv = 0 to 127
373Eh	Control 99 = 55 Control 98 = 62 Control 6 = vv	B0h 63h 37h B0h 62h 3Eh B0h 06h vvh	Reverb time: vv = 0 to 127

Table 6 MIDI Equalizer

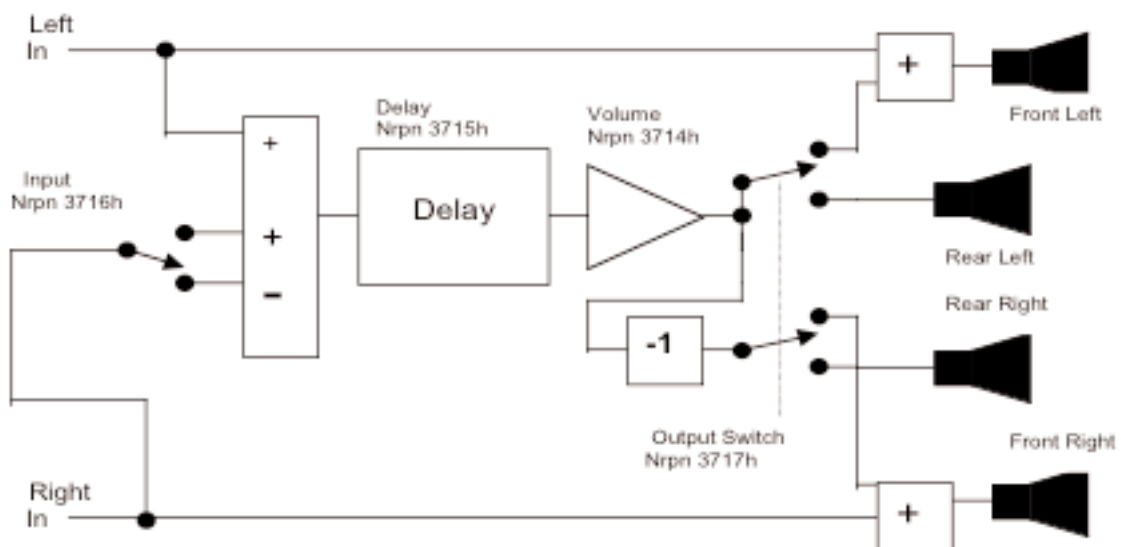
<i>Nrpn # High Low</i>	<i>Midi Message</i>	<i>Midi Code (Hexadecimal)</i>	<i>Description</i>
3708h	Control 99 = 55 Control 98 = 8 Control 6 = vv	B0h 63h 37h B0h 62h 08h B0h 06h vvh	Low band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
3709h	Control 99 = 55 Control 98 = 9 Control 6 = vv	B0h 63h 37h B0h 62h 09h B0h 06h vvh	Medium 1 band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
370Ah	Control 99 = 55 Control 98 = 10 Control 6 = vv	B0h 63h 37h B0h 62h 0Ah B0h 06h vvh	Medium 2 band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
370Bh	Control 99 = 55 Control 98 = 11 Control 6 = vv	B0h 63h 37h B0h 62h 0Bh B0h 06h vvh	High band gain vv = 0 to 127, linear scale in dB: 0h = -12dB, 20h = -6dB, 40h = 0dB, 60h = +6dB, 7Fh = +12dB
370Ch	Control 99 = 55 Control 98 = 12 Control 6 = vv	B0h 63h 37h B0h 62h 0Ch B0h 06h vvh	Low band frequency vv = 0 to 127 (frequency at -3dB) 16 = 152Hz, 32 = 305Hz, 64 = 610Hz, 127 = 1.25Khz
370Dh	Control 99 = 55 Control 98 = 13 Control 6 = vv	B0h 63h 37h B0h 62h 0Dh B0h 06h vvh	Medium 1 band frequency vv = 0 to 127 (center frequency) 16 = 175Hz, 32 = 350Hz, 64 = 700Hz, 127 = 1.4Khz
370Eh	Control 99 = 55 Control 98 = 14 Control 6 = vv	B0h 63h 37h B0h 62h 0Eh B0h 06h vvh	Medium 2 band frequency vv = 0 to 127 (center frequency) 16 = 175Hz, 32 = 350Hz, 64 = 700Hz, 127 = 1.4Khz
370Fh	Control 99 = 55 Control 98 = 15 Control 6 = vv	B0h 63h 37h B0h 62h 0Fh B0h 06h vvh	High band frequency vv = 0 to 127 (frequency at -3dB): 16 = 670Hz, 32 = 1.3Khz, 64 = 2.6Khz, 127 = 5.2Khz
3710h	Control 99 = 55 Control 98 = 16 Control 6 = vv	B0h 63h 37h B0h 62h 10h B0h 06h vvh	Medium 1 band width vv = 0 to 127 (band width at -3dB): 5 = 1/6 octave, 7 = 1/4 octave, 10 = 1/3 octave, 15 = 1/2 octave, 22 = 3/4 octave, 30 = 1 octave, 46 = 3/2 octaves, 64 = 2 octaves, 107 = 3 octaves
3711h	Control 99 = 55 Control 98 = 17 Control 6 = vv	B0h 63h 37h B0h 62h 11h B0h 06h vvh	Medium 2 band width vv = 0 to 127 (band width at -3dB) 5 = 1/6 octave, 7 = 1/4 octave, 10 = 1/3 octave, 15 = 1/2 octave, 22 = 3/4 octave, 30 = 1 octave, 46 = 3/2 octaves, 64 = 2 octaves, 107 = 3 octaves

1-4 MIDI SPATIALIZER

Before using these Nrpn's, be sure spatializer has been set ON with Nrpn 3755h (see paragraph 1.11).

Table 7 MIDI Spatializer

<i>Nrpn # High Low</i>	<i>Midi Message</i>	<i>Midi Code (Hexadecimal)</i>	<i>Description</i>
3714h	Control 99 = 55 Control 98 = 20 Control 6 = vv	B0h 63h 37h B0h 62h 14h B0h 06h vvh	Spatializer volume vv = 0 to 127
3715h	Control 99 = 55 Control 98 = 21 Control 6 = vv	B0h 63h 37h B0h 62h 15h B0h 06h vvh	Spatializer delay vv = 0 (= 0ms) to 127 (= 13.65ms), linear scale
3716h	Control 99 = 55 Control 98 = 22 Control 6 = vv	B0h 63h 37h B0h 62h 16h B0h 06h vvh	Spatializer input vv = 0: mono mode, input to delay line is Left + Right vv = 127: stereo mode, input to delay line is Left - Right
3717h	Control 99 = 55 Control 98 = 23 Control 6 = vv	B0h 63h 37h B0h 62h 17h B0h 06h vvh	Spatializer output vv = 0: output to master outputs vv = 127: output to auxiliary outputs



2- DETAILED MIDI IMPLEMENTATION

NOTE for system exclusive: code F0 41 00 42 12 ... can be also changed to F0 00 20 4F 00 02 12 ...

<i>MIDI Message</i>	<i>Hex code</i>	<i>Description</i>	<i>Compatibility</i>
NOTE ON	9nH kk vv	Midi channel n(0-15) note ON #kk(1-127), velocity vv(1-127). vv = 0 means NOTE OFF	MIDI
NOTE OFF	8nH kk vv	Midi channel n(0-15) note OFF #kk(1-127), vv is don't care.	MIDI
PITCH BEND	EnH bl bh	Pitch bend as specified by bh bl (14 bits) Maximum swing is +/- 1 tone (power-up). Can be changed using « pitch bend sensitivity ». Center position is 00H 40H.	GM
PROGRAM CHANGE	CnH pp	Program (patch) change. Specific action on channel 10 (n = 9): select drumset. Refer to sounds / drumset list. Drumsets can be assigned to other channels (see SYSEX MIDI channel to part assign and part to rhythm allocation)	GM/GS
CHANNEL AFTERTOUCH	DnH vv	vv pressure value. Effect set using Sys. Ex. 40H 2nH 20H-26H	MIDI
MIDI RESET	FFH	Reset to power-up condition	
CTRL 00	BnH 00H cc	Bank select: Refer to sounds list. No action on drumset. cc = 64 reserved for dream sound editor	GS/ DREAM
CTRL 01	BnH 01H cc	Modulation wheel. Rate and maximum depth can be set using SYSEX	MIDI
CTRL 05	BnH 05H cc	Portamento time.	MIDI
CTRL 06	BnH 06H cc	Data entry: provides data to RPN and NRPN	MIDI
CTRL 07	BnH 07H cc	Volume (default = 100)	MIDI
CTRL 10	BnH 0AH cc	Pan (default = 64 center)	MIDI
CTRL 11	BnH 0BH cc	Expression (default = 127)	MIDI/GM
CTRL 64	BnH 40H cc	Sustain (damper) pedal	MIDI
CTRL 65	BnH 41H cc	Portamento ON/OFF	MIDI
CTRL 66	BnH 42H cc	Sostenuto pedal	MIDI
CTRL 67	BnH 43H cc	Soft pedal	MIDI
CTRL 71	BnH 47H cc	TVF Resonance modify (same as nrpn 0121h)	GM/GS
CTRL 72	BnH 48H cc	Env release time modify (same as nrpn 0166h)	GM/GS

CTRL 73	BnH 49H cc	Env attack time modify (same as nrpn 0163h)	GM/GS
CTRL 74	BnH 4AH cc	TVF cutoff freq modify (same as nrpn 0120h)	GM/GS
CTRL 75	BnH 4BH cc	Env decay time modify (same as nrpn 0164h)	GM/GS
CTRL 76	BnH 4CH cc	Vibrato rate modify (same as nrpn 0108h)	GM/GS
CTRL 77	BnH 4DH cc	Vibrato depth modify (same as nrpn 0109h)	GM/GS
CTRL 78	BnH 4EH cc	Vibrato delay modify (same as nrpn 010Ah)	GM/GS
CTRL 84	BnH 54H vv	Portamento control	GS
CTRL 91	BnH 5BH vv	Reverb send level vv = 00H to 7FH	GS
CTRL 93	BnH 5DH vv	Chorus send level vv = 00H to 7FH	GS
CTRL 120	BnH 78H 00H	All sound off (abrupt stop of sound on channel n)	MIDI
CTRL 121	BnH 79H 00H	Reset all controllers	MIDI
CTRL 123	BnH 7BH 00H	All notes off	MIDI
CTRL 126	BnH 7EH 00H	Mono on	MIDI
CTRL 127	BnH 7FH 00H	Poly on (default power-up)	MIDI
CTRL CC1	BnH ccH vvH	Assignable Controller 1. cc = Controller number (0-5Fh), vv = Control value (0-7Fh). Control number (ccH) can be set on CC1 CONTROLLER NUMBER (Sys. Ex 40 1x 1F). The resulting effect is determined by CC1 controller function (Sys.Ex. 40 2x 40-4A)	GS
CTRL CC2	BnH ccH vvH	Assignable Controller 2. cc = Controller number (00h-5Fh), vv = control value (0-7Fh). Control number can be set on CC2 CONTROLLER NUMBER (Sys.Ex. 40 1x 20). The resulting effect is determined by CC2 controller function (Sys.Ex.40 2x 50-5A).	
RPN 0000H	BnH 65H 00H 64H 00H 06H vv	Pitch bend sensitivity in semitones (default = 2)	MIDI/GM
RPN 0001H	BnH 65H 00H 64H 01H 06H vv	Fine tuning in cents (vv = 00 -100, vv = 40H 0, vv = 7FH +100)	MIDI
RPN 0002H	BnH 65H 00H 64H 02H 06H vv	Coarse tuning in half-tones (vv = 00 -64, vv = 40H 0, vv = 7FH +64)	MIDI
NRPN 0108H	BnH 63H 01H 62H 08H 06H vv	Vibrate rate modify (vv = 40H -> no modif)	GS
NRPN 0109H	BnH 63H 01H 62H 09H 06H vv	Vibrate depth modify (vv = 40H -> no modif)	GS
NRPN 010AH	BnH 63H 01H 62H 0AH 06H vv	Vibrate delay modify (vv = 40H -> no modif)	GS

NRPN 0120H	Bnh 63H 01H 62H 20H 06H vv	TVF cutoff freq modify(vv = 40H -> no modif)	GS
NRPN 0121H	BnH 63H 01H 62H 21H 06H vv	TVF resonance modify (vv = 40H -> no modif)	GS
NRPN 0163H	Bnh 63H 01H 62H 63H 06H vv	Env. attack time modify(vv = 40H ->no modif)	GS
NRPN 0164H	BnH 63H 01H 62H 64H 06H vv	Env. decay time modify(vv = 40H -> no modif)	GS
NRPN 0166H	BnH 63H 01H 62H 66H 06H vv	Env. release time modif(vv = 40H ->no modif)	GS
NRPN 18rrH	BnH 63H 18H 62H rr 06H vv	Pitch coarse of drum instr. note rr in semitones (vv = 40H -> no modif)	GS
NRPN 1ArrH	BnH 63H 1AH 62H rr 06H vv	Level of drum instrument note rr (vv = 00 to 7FH)	GS
NRPN 1CrrH	BnH 63H 1CH 62H rr 06H vv	Pan of drum instrument note rr (40H = middle)	GS
NRPN 1DrrH	BnH 63H 1DH 62H rr 06H vv	Reverb send level of drum instrument note rr (vv = 00 to 7FH)	GS
NRPN 1ErrH	BnH 63H 1EH 62H rr 06H vv	Chorus send level of drum instrument note rr (vv = 00 to 7FH)	GS
NRPN 37xxH	BnH 63H 37H 62H xx 06H vv	Special features controls (see paragraph 1 above)	DREAM
Standard Sysex	F0H 7EH 7FH 09H 01H F7H	General MIDI reset	GM
Standard Sysex	F0H 7FH 7FH 04H 01H 00H ll F7H	Master volume (ll = 0 to 127, default 127) Not reset by GS reset	GM
SYSEX	F0H 41H 00H 42H 12H 40H 00H 00H dd dd dd dd xx F7H	Master tune (default dd = 00H 04H 00H 00H) -100.0 to +100.0 cents. Nibblized data should be used (always four bytes). For example, to tune to +100.0 cents, sent data should be 00H 07H 0EH 08H	GS
SYSEX	F0H 41H 00H 42H 12H 40H 00H 04H vv xx F7H	Master volume (default vv = 7FH) Not reset by GS reset.	GS
SYSEX	F0H 41H 00H 42H 12H 40H 00H 05H vv xx F7H	Master key-shift (default vv = 40H, no transpose)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 00H 06H vv xx F7H	Master pan (default vv = 40H, center)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 00H 7FH 00H xx F7H	GS reset	GS
SYSEX	F0H 41H 00H 42H 12H 00H 00H 7FH xx xx F7h	GS reset	GS

SYSEX	F0H 41H 00H 42H 12H 40 01H 10H vv1 vv2 vv3 vv4 vv5 vv6 vv7 vv8 vv9 vv10 vv11 vv12 vv13 vv14 vv15 vv16 xx F7h	Voice reserve: vv1 = Part 10 (Default vv = 2) vv2 to vv10 = Part 1 to 9 (Default vv = 2) vv11 to vv16 = Part 11 to 16 (Default vv = 0)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 30H vv xx F7H	Reverb type (vv = 0 to 7), default = 04H 00H: Room 1; 01H: Room 2 02H: Room 3; 03H: Hall 1 04H: Hall 2; 05H: Plate 06H: Delay; 07H: Pan delay	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 31H vv xx F7H	Reverb character, default 04H	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 32H vv xx F7H	Reverb Pre-LPF, 0 to 7, default 0	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 33H vv xx F7H	Reverb master level, default = 64	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 34H vv xx F7H	Reverb time	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 35H vv xx F7H (delays)	Reverb delay feedback. Only if reverb number = 6 or 7	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 38H vv xx F7H	Chorus type (vv = 0 to 7), default = 02H 00H: Chorus 1 01H: Chorus 2 02H: Chorus 3 03H: Chorus 4 04H: Feedback 05H: Flanger 06H: Short delay 07H: FB delay	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 39H vv xx F7H	Chorus Pre-LPF, 0 to 7, default = 0	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3AH vv xx F7H	Chorus master level, default = 64	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3BH vv xx F7H	Chorus feedback	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3CH vv xx F7H	Chorus delay	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3DH vv xx F7H	Chorus rate	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3EH vv xx F7H	Chorus depth	GS

SYSEX	F0H 41H 00H 42H 12H 40H 01H 3FH vv xx F7H	Chorus send level to reverb, default = 0	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 1pH	MIDI channel to part assign, p is part (0 to 15), nn is MIDI 02H nn xx F7Hchannel (0 to 15, 16 = OFF). This SYSEX allows to assign several parts to a single MIDI channel or to mute a part. Default assignment: <table border="1"> <thead> <tr> <th><u>part</u></th> <th><u>MIDI channel</u></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>9 (DRUMS)</td> </tr> <tr> <td>1-9</td> <td>0-8</td> </tr> <tr> <td>10-15</td> <td>10-15</td> </tr> </tbody> </table>	<u>part</u>	<u>MIDI channel</u>	0	9 (DRUMS)	1-9	0-8	10-15	10-15	GS
<u>part</u>	<u>MIDI channel</u>										
0	9 (DRUMS)										
1-9	0-8										
10-15	10-15										
SYSEX	F0H 41H 00H 42H 12H 40H 1pH 15H vv xx F7H	Part to rhythm allocation, p is part (0 to 15), vv is 00 (sound part) or 01 (rhythm part). This SYSEX allows a part to play sound or drumset. There is no limitation of the number of parts playing drumset. Default assignment: part 0 plays drums (default MIDI channel 9) all other parts play sound.	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 40H v1 v2 ... v12 xx F7H	Scale tuning, n is MIDI channel (0 to 15), v1 to v12 are 12 semi-tones tuning values (C, C#, D, ... A#, B), in the range -64 (00H); 0 (40H); +63(7FH) cents. This SYSEX allows non chromatic tuning of the musical scale on a given MIDI channel. Default v1, v2, ... , v12 = 40H, 40H,...,40H (chromatic tuning). Scale tuning has no effect if the part is assigned to a rhythm channel or if the sound played is not of chromatic type.	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 1AH vv xx F7H	Velocity slope from 00H to 7FH (default = 40H)	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 1BH vv xx F7H	Velocity offset from 00H to 7FH (default = 40H)	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 1FH vv xx F7H	CC1 Controller number (00-5FH) (default = 10H)	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 20H vv xx F7H	CC2 Controller number (00-5FH) (default = 11H)	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 00H vv xx F7H	Mod pitch control (-24,+24 semitone) (default = 40H)	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 01H vv xx F7H	Mod tvf cutoff control (default = 40H)	GS								
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 02H vv xx F7H	Mod Amplitude control (-100%--+100%) (default = 40H)	GS								

SYSEX	F0H 41H 00H 42H 12H 40H 2nH 03H vv xx F7H	Mod lfo1 rate control (default = 40H). n is don't care. Rate is common on all channels	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 04H vv xx F7H	Mod lfo1 pitch depth (0-600 cents) (default = 0AH)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 05H vv xx F7H	Mod lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 06H vv xx F7H	Mod lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 10H vv xx F7H	Bend pitch control (-24,+24 semitone) (default = 42H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 11H vv xx F7H	Bend tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 12H vv xx F7H	Bend Amplitude control (-100%+100%) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 14H vv xx F7H	Bend lfo1 pitch depth (0-600 cents) (default = 00H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 15H vv xx F7H	Bend lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 16H vv xx F7H	Bend lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 20H vv xx F7H	CAF pitch control (-24,+24 semitone) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 21H vv xx F7H	CAF tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 22H vv xx F7H	CAF Amplitude control (-100%+100%) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 24H vv xx F7H	CAF lfo1 pitch depth (0-600 cents) (default = 00H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 25H vv xx F7H	CAF lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 26H vv xx F7H	CAF lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 40H vv xx F7H	CC1 pitch control (-24,+24 semitone) (default = 40H)	GS

SYSEX	F0H 41H 00H 42H 12H 40H 2nH 41H vv xx F7H	CC1 tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 42H vv xx F7H	CC1 Amplitude control (-100%+100%) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 44H vv xx F7H	CC1 lfo1 pitch depth (0-600 cents) (default = 00H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 45H vv xx F7H	CC1 lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 46H vv xx F7H	CC1 lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 50H vv xx F7H	CC2 pitch control (-24,+24 semitone) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 51H vv xx F7H	CC2 tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 52H vv xx F7H	CC2 Amplitude control (-100%+100%) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 54H vv xx F7H	CC2 lfo1 pitch depth (0-600 cents) (default = 00H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 55H vv xx F7H	CC2 lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 56H vv xx F7H	CC2 lfo1 tva depth (0-100%) (default = 0H)	GS

CONTROL MESSAGES OVERVIEW

A device control message consists of one CONTROL byte followed by one DATA8 byte (parameter). After receiving DATA8 byte, operation resumes to the MIDI device.

Ctrl #	Action	Compatible NRPN/SYSEX
07h	Master volume	Nrpn 3707h
08h	Midi Equalizer low band	Nrpn 3708h
09h	Midi Equalizer med1 band	Nrpn 3709h
0Ah	Midi Equalizer med2 band	Nrpn 370Ah
0Bh	Midi Equalizer high band	Nrpn 370Bh
0Ch	Midi Equalizer low band frequency	Nrpn 370Ch
0Dh	Midi Equalizer med1 band frequency	Nrpn 370Dh
0Eh	Midi Equalizer med2 band frequency	Nrpn 370Eh
0Fh	Midi Equalizer high band frequency	Nrpn 370Fh
10h	Midi Equalizer Med1 band width	Nrpn 3710h
11h	Midi Equalizer Med2 band width	Nrpn 3711h
13h	Ambiance preset	Nrpn 3713h

14h	Spatializer effect volume	Nrpn 3714h
15h	Spatializer effect delay	Nrpn 3715h
16h	Input mono/stereo select for spatializer	Nrpn 3716h
17h	2 or 4 outputs output select for spatializer	Nrpn 3717h
18h	General Midi volume	Nrpn 3718h / SysEx 40h 00h 04h
19h	General Midi pan	Nrpn 3719h / SysEx 40h 00h 06h
1Ah	General Midi Reverb Send	Nrpn 371Ah
1Bh	General Midi Chorus Send	Nrpn 371Bh
1Ch	Input1 Delay Send	Nrpn 371Ch
1Dh	Input2 Delay Send	Nrpn 371Dh
1Eh	Input1 Reverb Send	Nrpn 371Eh
1Fh	Input2 Reverb Send	Nrpn 371Fh
20h	Input1 volume	Nrpn 3720h
21h	Input2 volume	Nrpn 3721h
22h	Input1 pan	Nrpn 3722h
23h	Input2 pan	Nrpn 3723h
25h	Input1 Equalizer preset	Nrpn 3725h
26h	Input1 Equalizer low band	Nrpn 3726h
27h	Input1 Equalizer med1 band	Nrpn 3727h
28h	Input1 Equalizer med2 band	Nrpn 3728h
29h	Input1 Equalizer high band	Nrpn 3729h
2Ah	Input1 Equalizer low band frequency	Nrpn 372Ah
2Bh	Input1 Equalizer med1 band frequency	Nrpn 372Bh
2Ch	Input1 Equalizer med2 band frequency	Nrpn 372Ch
2Dh	Input1 Equalizer high band frequency	Nrpn 372Dh
2Eh	Input1 Equalizer Med1 band width	Nrpn 372Eh
2Fh	Input1 Equalizer Med2 band width	Nrpn 372Fh
30h	Input2 Equalizer preset	Nrpn 3730h
31h	Input2 Equalizer low band	Nrpn 3731h
32h	Input2 Equalizer med1 band	Nrpn 3732h
33h	Input2 Equalizer med2 band	Nrpn 3733h
34h	Input2 Equalizer high band	Nrpn 3734h
35h	Input2 Equalizer low band frequency	Nrpn 3735h
36h	Input2 Equalizer med1 band frequency	Nrpn 3736h
37h	Input2 Equalizer med2 band frequency	Nrpn 3737h
38h	Input2 Equalizer high band frequency	Nrpn 3738h
39h	Input2 Equalizer Med1 band width	Nrpn 3739h
3Ah	Input2 Equalizer Med2 band width	Nrpn 373Ah
3Bh	Input Reverb Preset	Nrpn 373Bh
3Ch	Input Reverb Volume	Nrpn 373Ch
3Dh	Enable midi out	
3Eh	Input Reverb Time	Nrpn 373Eh
3Fh	Switch to UART mode	
40h	Input 1 & 2, input volume, 0 to 7Fh	Nrpn 3740h
41h	2nd stereo audio input volume, 0 to 7Fh	Nrpn 3741h
43h	Input Delay presets	Nrpn 3743h
44h	Input Delay level	Nrpn 3744h
45h	Input Delay time	Nrpn 3745h
46h	Input Delay feedback	Nrpn 3746h
47h	Input Delay filter	Nrpn 3747h
49h	Slave1 Delay right volume	Nrpn 3749h

4Ah	Slave1 Delay left volume	Nrpn 374Ah
4Bh	Slave2 Delay right volume	Nrpn 374Bh
4Ch	Slave2 Delay left volume	Nrpn 374Ch
4Dh	Master Delay right volume	Nrpn 374Dh
4Eh	Master Delay left volume	Nrpn 374Eh
50h	Input module mixing to Main Outputs	Nrpn 3750h
51h	Input module mixing to Auxiliary output	Nrpn 3751h
55h	Input Reverb On/Off	Nrpn 3756h
56h	Input1 Level/Key Detection On/Off	Nrpn 3756h
57h	Input2 Level/Key Detection On/Off	Nrpn 3756h
58h	Midi Equalizer On/Off	Nrpn 3755h
59h	Spatializer On/Off	Nrpn 3755h
5Ah	Reverb On/Off	Nrpn 3755h
5Bh	Chorus On/Off	Nrpn 3755h
5Ch	Input On/Off	Nrpn 3756h
5Dh	Delay On/Off	Nrpn 3756h
5Eh	Input Equalizer On/Off	Nrpn 3756h
60h	Reverb program select	SysEx 40h 01h 30h
61h	Reverb general volume	SysEx 40h 01h 33h
62h	Reverb time	SysEx 40h 01h 34h
63h	Reverb feedback	SysEx 40h 01h 35h
64h	Reverb pre low pass filter	SysEx 40h 01h 32h
68h	Chorus program select	SysEx 40h 01h 38h
69h	Chorus general volume	SysEx 40h 01h 3Ah
6Ah	Chorus delay	SysEx 40h 01h 3Ch
6Bh	Chorus feedback	SysEx 40h 01h 3Bh
6Ch	Chorus rate	SysEx 40h 01h 3Dh
6Dh	Chorus depth	SysEx 40h 01h 3Eh
6Eh	Chorus pre low pass filter	SysEx 40h 01h 39h
BEh	Enable dream control in stand alone mode	
FFh	Reset UART mode	

Please report any mistake found in the above MIDI implementation info to:

support@waveidea.com