nord wave
S Y N T H E S I Z E R

USER MANUAL

Software Version 1.0X

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

Contents

1. Introduction

Thank you!

First we would like to thank you for purchasing the Nord Wave. We hope you will find it to be everything you have wished for and that you will have many hours of great fun with your new instrument.

Development story

The Nord Wave is built on a legacy of making virtual analog synthesizers for more than 15 years. Virtual means "not physically existing as such but made by software to appear to do so", so the nord synthesizers are very digital, but behaves, feels and sounds like an analog synthesizer.

Surely today, you can find a lot of digital instruments in both hardware and software that attempts to sound like an analog synthesizer. But for the spot-on feel, response and sound most of them end up quite far from the spot.

To us, details are everything - and an intuative and fast to use user-interface is just as important as the sound. We are musicians ourselves, and know by experience how frustrating it can be to have to wade through menus and page-plus buttons to change a setting. That is why we have a physical button our knob for every sound related parameter on the front panel. Also, we know the importance of building our instruments as light weighted as possible - some times it is a long walk to that gig.

Our vision in designing and combining our own hardware and software is to have professional sound quality and playability in every single component; from the stroke of the key all the way to the audio output.

Our patented pitch stick is a perfect example on how dedicated hardware and software extends playability. Once you get familiar with it you are likely to dismiss all other pitch sticks as a toys.

Since we are working in a digital domain, we can do a lot of interesting stuff with our virtual analog synthesizer that would not be possible if it was analog-for-real. For instance we can store a sound setting, and recall it any time we want. This might not blow your mind, but remember that this simple task was not available to the all-analog synthesizers.

The oscillator is where the sound is generated, and by routing it through a filter and a amplifier envelope we have a basic synthesizer. An analog oscillator is limited to generating a few basic waveforms, and though we can add stuff (like numerous LFO's and EG's and different filter types) to make our synthesizer more complex, the foundation of the sound is set to what the oscillator can do. Think of a highway - you do not get more lanes by adding a lot of access ramps.

With the Nord Wave we have not only added a fast lane, but rebuilt the entire highway into a roller coaster; the magic is in the oscillators and we can have them produce many other things than the standard analog waveforms. This is a concept we have been working on since the first Nord Lead synthesizer introduced in 1995, and currently includes:

- Traditional analog waveforms (Pule, Triangle, Saw and Sine)
- FM-synthesis (Frequency Modulation); generating very complex and metalic style waveforms.
- Wavetables - single cycle waveforms with large variations in tonal character.
- Sampled waves - acoustic samples turned into wavetables with the attack partion of the sample intact.
- User replaceable samples - using any standard .wav-file as a oscillator source in a virtual ananlog environment.

Filters are great for shaping your sound. We have included not only the basic filter types, but some really interesting multimode filters as well.

Also, morphing; if there is one chapter in this manual you *must* read - it is the one on morphing. It is very intuative yet extremely powerfull (just the way we like it), and will change not only your playing but also your approach to sound design.

Featuring the ability to use any type of sampled waveforms, the nord wave is a sample player *and* an analog synthesizer in one - and anything in-between.

Like a fabulous bouquet you do not know brilliant response and sound until you have experienced it - we hope you will find your nord wave experience as astonishing as we have developing it.

Features

The Nord Wave is a virtual analog synthesizer with an extensive set of oscillators capable of producing various waveforms including classical analog, FM and wavetable as well as playback of sampled waveforms.

Synthesizer

In an classical analog synthesizer environment, each of the Nord Wave's two Synthesizer Sections consist of 2 Oscillators, 2 LFOs, 1 Modulation Envelope, 1 Amplifier Envelope and a Multi-type Filter section:

- Oscillator 1 can produce wavetable, FM, analog and noise waveforms, as well as operate in Sync mode.
- Oscillator 2 can produce sampled waves, FM, analog and sampled waveforms, as well as function as a modulation source for Oscillator 1.
- The LFOs have a wide array of modulation destinations as well as random waveforms and the ability to run in Poly and Single mode.
- The Modulation Envelope also has a wide array of modulation destinations and can funciton as either attack/decay or attack/release envelope.
- The Filter section has envelope and velocity control, and is selectable between resonant high pass, band pass

and low pass modes as well as Comb, Multi and Vocal modes.

Virtually any parameter can be seamlessly altered via a Morph Source such as the *MODULATION WHEEL* & *CONTROL PEDAL* input, note number or note velocity.

Each Synthesizer Section also features a 2-band EQ, chorus, output level, mono/legato, glide and vibrato settings.

The Nord Wave is dual timbral; two sounds can be played in layer or be switched between seamlessly using the *SLOT A* & *B* buttons.

Both *SLOTS A & B* are stored within a program.

Effects

The Program section features an tube style overdrive, stereo delay and reverb.

Programs

Programs can be stored in 1024 locations, organized in 8 banks and can be categorized for quick access.

Samples

User recorded and mapped key-zoned samples can be downloaded via USB and stored in 99 memory locations or up to 185Mb of compressed lossless data.

The memory is of Flash type which means that the data remains in memory when power is cut, and there is no use for hard drives or other type of loading media; once loaded into the memory the data will be there till you remove it yourself!

Clavia's custom developed non-destructive compression algorithm allows sample data sizes equivalent of up to 3 times the size of the physical memory.

Control & connections

The Nord Wave has a 49-key keyboard with velocity and aftertouch, modulation wheel and wooden pitch stick, 2 line level outputs, 1 headphone output, MIDI IN & OUT, sustain pedal and control pedal inputs.

More samples

More high quality samples can be downloaded free of charge from the clavia web site: www.clavia.se

About this manual

Text displayed *LIKE THIS* refers to a knob, button, connector or area on the instruments panel.

Text displayed `LIKE THIS` refers to what is displayed in the instrument's *LCD WINDOW*.

Text displayed *LIKE THIS* refers to what is displayed in the corresponding oscillator *LED* window.

You can download the latest version of this manual on the clavia web site: www.clavia.se

2.   Overview
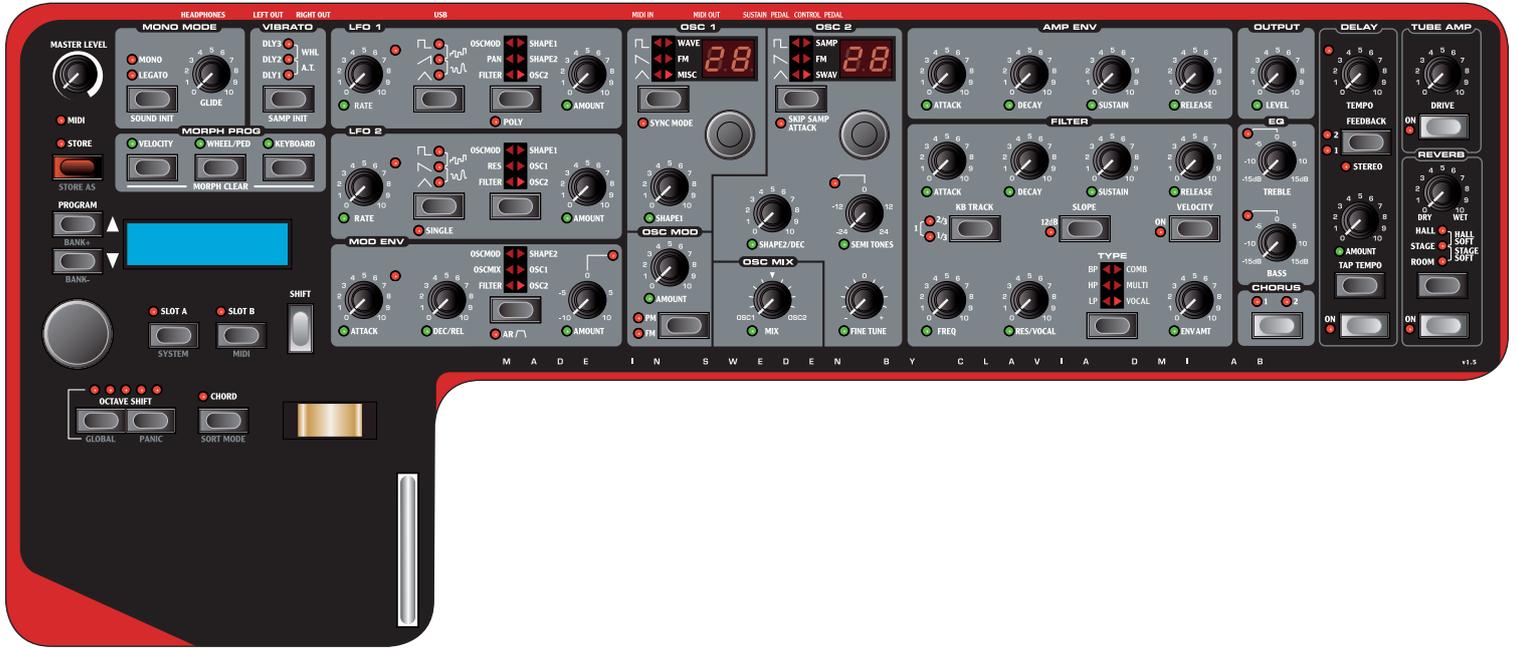
The Front panel
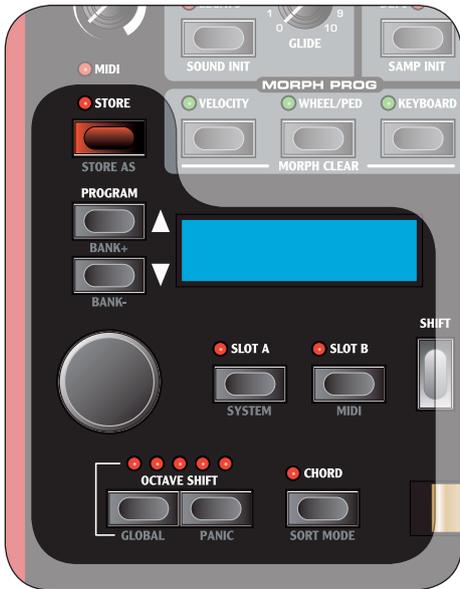
Program Section

The Program Section parameters are use for editing and selecting program specific parameters.

Please refer to page 14 for more information.

Synth Section

The Synth Section parameters are all printed against a gray background, and are used for editing synthesis related parameters.

For each program you have two individual Synth Sections available, both controllable through the same panel, one at a time. You choose which section to control by pressing the *SLOT A* or *SLOT B* button.

For more information on Slot buttons please refer to page 10.

For more information on the Synth Section please refer to page 16.

Effect Section

The Effect section parameters are used for editing program specific effect parameters. The Effect Section is common for both Synth sections. Please refer to page 12 for more information.

Keyboard Section

The keyboard section consists of the keyboard, modulation wheel, pitch stick and various keyboard related buttons.

Please refer to page 10 for more information.

LCD Window

The LCD window is normally used for displaying the current program bank, number, name and category.

When operating a knob or button the associated parameter name and setting will breifly show in the LCD window.

The LCD window is also used for displaying the System menu or MIDI menu.

System Menu

The System Menu is used for editing system specific parameters. You access it by pressing the *SYSTEM* button (*SHIFT + SLOT A*).

Please refer to page 31 for more information.

MIDI Menu

The MIDI Menu is used for editing MIDI specific settings. You access it by pressing the *MIDI* button (*SHIFT + SLOT B*).

Please refer to page 29 for more information.

MIDI LED indicator

The *MIDI LED* will indicate incoming MIDI note messages by briefly lighting up.

About knobs

MASTER LEVEL **knob**

The *MASTER LEVEL* knob controls the overall amplitude for all audio outputs, including line level outputs and headphone output. The *MASTER LEVEL* knob's physical position is always the same as the output level.

LCD-dial

The LCD-dial is used for changing the current setting displayed in the LCD window. If not in the System or MIDI Menu, this means loading a new program.

The dial is endless, though the array of parameter settings are not; once you reach the first or last possible setting, turning the dial further will have no effect.

The dial has an accelerator feature; when operated swiftly increasment/decreasment will be made in larger intervals.

⚠ *If only one setting is available, turning the knob will have no effect.*

LED-dials

The dials have a LED window to show their parameter setting. When operating the dial the current setting is also shown briefly in the LCD window.

The dials themselves are endless, though the array of parameter settings are not; once you reach the first or last possible setting, turning the dial further will have no effect. The LED window will update automatically when loading a program.

⚠ *If only one setting is available (for instance if you have only 1 sample in memory), turning the dial will have no effect.*

Potentiometer knobs

Potentiometer type knobs have a fixed range with start and end positions. The knobs position is physically indicated which make them convenient as you instantly 'feel' the knobs position and can easily operate the knob without looking.

⚠ *Note when loading a program; a parameter value can be totally different from the knob's physical position. As soon as you start turning the knob the parameter value will 'snap' to the knob's physical position.*

Most potentiometer type knobs have a green LED indicator below them. This LED is used for indicating when a parameter is connected to a *MORPH* source. Please refer to page 27 for more information on morphing.

Value indicators

The Modulation Envelope's *AMOUNT* LED as wel as the EQ's *TREBLE* and *BASS* LEDs will indicate a parameter setting of zero by briefly inverting the LED's state.

In the same manner, Oscillator 2's *SEMI TONES* LED will indicate a parameter setting equivalent of whole octaves.

- If the parameter *is not* connected to a Morph Source: the LED is unlit, and will light up for about half a second or until the parameter setting is no longer at the indicated value.

- If the parameter *is* connected to a Morph Source; the LED is lit, and will be turned off for about half a second or until the parameter setting no longer is at the indicated value.

About buttons
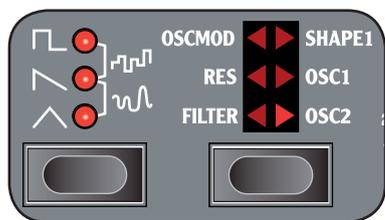
Selector buttons

Selector buttons are used for activating one setting in an array of two or more settings. Selector buttons have a set of round or triangular LEDs to indicate the current setting.

- If all LEDs are unlit, the parameter is bypassed or at its default state.

- If two LEDs are lit, the parameter value with the corresponding bracket is selected.

On/off buttons

On/Off buttons are used for activating a parameter or a group of parameters such as effects. The LED next to the button will indicate when the parameter is active.

SHIFT button

Some buttons have a secondary function available by holding *SHIFT* while pressing the button. The name of the secondary function is printed just below the button.

PANIC button

By pressing the *PANIC* button (*SHIFT + OCTAVE SHIFT UP* buttons) all sounding notes will be silenced.

⚠ *Note: Equipment connected via MIDI OUT is not affected.*

Slot buttons

Slot buttons are used for setting panel and keyboard focus .

Please refer to page 10 for more information.
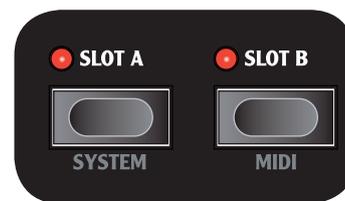
OCTAVE SHIFT buttons

The *OCTAVE SHIFT* buttons are used for transposing the *KEYBOARD* in whole octaves.

Please refer to page 10 for more information.

CHORD button

The *CHORD* button activates the Chord Memory function, which is used for memorizing note intervals and automatically adding them to each key you play.

Please refer to page 11 for more information.

STORE button

The *STORE* button is used for storing all your settings into a Program.

Please refer to page 12 for more information.
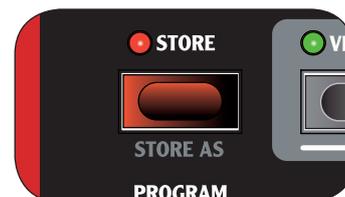
PROGRAM buttons

The *PROGRAM* button are used for loading the next or previous program.

They can also be used with the *SHIFT* button to select the next or previous Program Bank.

In the *SYSTEM* menu and the *MIDI* menu they are used for selecting the next or previous page.

Please refer to page 12 for more information.
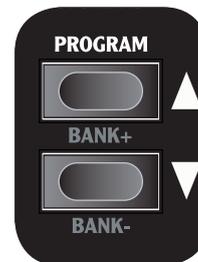
3. Connections

Audio Connections

LEFT OUT **and** *RIGHT OUT*
Mono-plug connections used as audio output to other line level equipment.

⚠ **To properly experience the Nord Wave, always use both outputs in a stereo operation.**

Headphones
Stereo-plug connection used for headphones.

General guide for audio connections

- Make all connections before turning on the power to your amplifier.
- Turn *on* the power to your amplifier *last*.
- Turn *off* the power to your amplifier *first*.

⚠ **Playing at a high volume level can result in hearing impairments such as permanent hearing loss.**

MIDI connections

MIDI OUT
MIDI-plug connection used for transferring MIDI data to other equipment such as sound modules or computers.

MIDI IN
MIDI-plug connection used for receiving MIDI data from other equipment such as keyboards, sound modules and computers.

USB Connection
USB-plug connection used for communication with the Nord Wave Manager software and OS system upgrades.

⚠ **Computers running Microsoft Windows operating systems need a driver for the USB connection to function. The driver can be found on the enclosed CD, or on the Clavia website.**

Pedal Connections

SUSTAIN **pedal**
Mono-plug connector for switch type pedals (also known as sustain pedals) used for sustaining notes.

CONTROL **pedal**
Stereo-plug connector for pedals of potentiometer type (also know as expression pedals) used as a source for the Morph function or overall volume controll. Please refer to page 27 for more information on Morphing.

4. The Keyboard Section

Panel & Keyboard Focus *(SLOT A & SLOT B buttons)*

Slot buttons are used for setting Panel and Keyboard Focus to either or both of the two Synth Sections.

- Panel Focus refers to the knobs and buttons of the Synthesizer Section.

- Keyboard Focus refers to the controls and buttons of the Keyboard Section, the *KEYBOARD* and the pedal inputs.

Only one slot can have Panel Focus at one time, where as both slots can simultaneously have Keyboard Focus.

- Use the *SLOT A* or *SLOT B* buttons to set Panel Focus the corresponding slot's Synth Section.

- Press both slot buttons simultaneously to set keyboard focus to both slots. In this mode both LEDs are lit, and the slot with Panel Focus will have a flashing LED.

- With Keyboard Focus set to both slots, press both slot buttons again to set keyboard focus to only one slot.

⚠ **When pressing both slot buttons simultaneously, the button you press first will be in focus.**

⚠ **Keyboard and Panel Focus is only used locally. Both Synth Section are always available to other equipment connected via MIDI in (on the slots corresponding MIDI channel) regardless of the Keyboard and Panel Focus setting.**
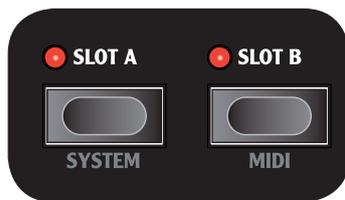
OCTAVE SHIFT buttons

The *OCTAVE SHIFT* buttons transpose the Synth Section with Panel Focus in even octaves.

The center LED indicates that no octave shift is applied.

- LEDs to the right of the center LED will indicate a higher octave shift as you press the right *OCTAVE SHIFT* button.

- LEDs to the left of the center LED will indicate a lower octave shift as you press the left *OCTAVE SHIFT* button.

⚠ **Equipment connected via** *MIDI OUT* **is not affected.**

Global Octave Shift

By pressing the *GLOBAL* button (*SHIFT + OCTAVE SHIFT* down) you can transpose the *KEYBOARD* in even octaves. The LEDs are in an inverted state to reflect that you are in Global Octave Shift mode. In this mode, both slots as well as equipment connected via *MIDI OUT* is effected.

⚠ **Note: a combination of extreme** *OCTAVE SHIFT* **and** *OSC 2's SEMI TONES* **setting can produce sounds outside the hearing range.**

CHORD **button**

The *CHORD* button activates the Chord Memory function, which is used for memorizing note intervals and automatically adding them to each key you play.

The Chord Memory settings are stored within a Program.

1 **Play a chord and press & hold the** *CHORD* **button.**
The display will show the intervals of the notes in the played chord based on the lowest note (which is displayed as 0).

2 **Release the** *CHORD* **button first, then the chord.**
The note intervals are memorized and the Chord Memory function is activated.

⚠ *If you want to cancel the Chord Memory function while holding the* CHORD *button pressed down, simply release the chord first, then the* CHORD *button.*

Now, the intervals stored in the Chord Memory will be added automatically to each note you play.

3 **Press the** *CHORD* **button to deactivate the Chord Memory function.**
Once deactivated, you can at any time press the *CHORD* button again (without holding any keys down) to activate it.

⚠ *Note that since you use several notes in the Chord Memory function, polyphony will be reduced.*

⚠ *Note that it is only the actual key(s) you play that will output MIDI Note information to the MIDI OUT - not the intervals included in the Chord Memory!*

Modulation wheel

The modulation wheel can be used to apply vibrato to the sound, as well as a source for the Morph function.

The set the *MODULATION WHEEL* to control vibrato, press the *VIBRATO* selector button until the LEDs indicate *WHEEL*.

⚠ *Vibrato setting is individual for* SLOT A **and s**LOT B**.**

Please refer to page 27 for information on the Morph function.

Pitch stick

The Clavia patented wooden *PITCH STICK* gives you spot on bending control just like that of a guitarist. The pitch interval is locked to 2 semi tones, and is activated dependant on Keyboard Focus setting.

5.

The Effect Section

The Effect section holds 3 effects common to both Synth Sections. Effect settings are stored within a Program.

The *ON* knob activates/deactivates the effect.

About Unison and EQ

The *CHORUS* and *EQ* effects are individual to both Synth Sections. Please refer to page18 for more information.

Delay

The *DELAY* effect ads vintage-style delayed repeats to your sound.

TEMPO **LED**

The *TEMPO* LED indicates the current tempo setting.

AMOUNT **knob**

The *AMOUNT* knob controls the balance in amplitude between the unprocessed (*DRY*) and processed (*WET*) signal.

⚠ **When set to either** *DRY* **or** *WET***, only the corresponding signal will be heard.**

TEMPO **knob**

The *TEMPO* knob controls the time interval of the delayed repeats.

FEEDBACK **button**

The *FEEDBACK* button selects presets of number of delayed repeats.

⚠ **Note that the LEDs labels (***1* **and** *2***) refers to the preset number, and not the actual number of delayed repeats.**

STEREO **button**

The *STEREO* button (*SHIFT* + *FEEDBACK* button) activates the delay in stereo operation.

TAP TEMPO **button**

The *TAP TEMPO* button controls the tempo setting of the delay effect. By repeatedly tapping the button, the tempo is set to match the interval of your taps.

⚠️ ***The tempo LED will indicate while the tempo is being calculated. As long as it is lit, your first tap will be used as a reference. Wait till it goes dark to start with a new reference.***

Tube amp

The *TUBE AMP* effect adds tube-style overdrive to your sound.

DRIVE **knob**

The *DRIVE* knob controls the amount of overdrive applied to your sound.

⚠️ ***A setting of zero will produce no overdrive.***

Reverb

The *REVERB* effects simulates natural sound reflections in various acoustic environments.

REVERB **button**

The *REVERB* button selects the type of environment:

Setting	Description
ROOM	Small reverberation with room ambiance and a fast decay.
STAGE SOFT	Medium reverberation with stage ambiance, medium decay and a mellow character.
STAGE	Medium reverberation with stage ambiance, medium decay and a bright character
HALL SOFT	Full reverberation with a hall ambiance, slow decay and a mellow character.
HALL	Full reverberation with a hall ambiance, slow decay and a bright character.

DRY/WET **knob**

The *DRY/WET* knob controls the balance in amplitude between the unprocessed (*DRY*) and processed (*WET*) signal.

⚠️ ***When set to either*** *DRY* ***or*** *WET***, only the corresponding signal will be heard.***

6.

The Program section
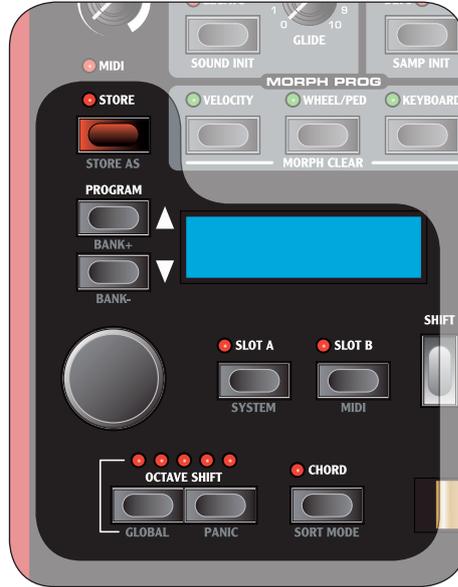
What is a Program?

All sound related settings can be saved into a Program.
A Program can be instantly recalled to produce the same
sound as when you saved it. These settings include: both
Synth Sections, Panel and Keyboard focus (*SLOT A* and
SLOT B buttons), *EFFECTS*, *CHORD MEMORY*, *OCTAVE
SHIFT* and *MORPH* settings.

⚠ *MIDI* **menu and** *SYSTEM* **menu settings are not stored
whit in a program, but are global i.e.; their settings
effects all programs all the time.**

There are 1024 program locations available, where every
location have a bank and program number. Programs also
have a name and can be divided into categories.

The currently loaded program is shown in the *LCD DIS-
PLAY*.

In the example above 2 represents the Bank number, 17
the Program number, LEAD the Category and FREAKY
NORD the Program name.

Sorting Programs
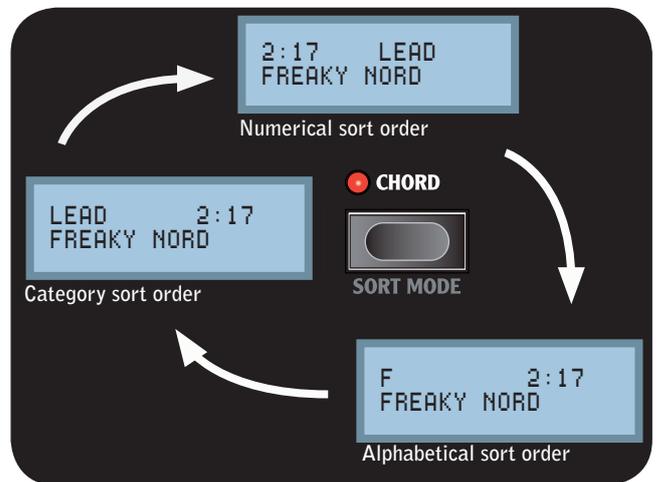
Programs can be sorted Numerically, by Category or
Alphabetically by pressing the *SORT MODE* button (*SHIFT
+ CHORD*).

List of Categories

CATEGORY
ACOUSTIC
BASS
DRUM
FANTASY
FX
LEAD
ORGAN
PAD
PIANO
PLUCK
STRINGS
SYNTH
VOCAL
WIND
USER1
USER2
USER3

Loading a Program

Use the *PROGRAM* buttons to load the next or previous program, depending on the current *SORT MODE* setting.

You can also use the LCD-dail to select Program.

⚠️ *Programs are loaded automatically.*

When in Numerical Sort Mode (default):
- Use the *BANK* buttons (*SHIFT + PROGRAM* buttons) to select the next or previous bank.

When in Category Sort Mode:
- Use the *BANK* buttons (*SHIFT + PROGRAM* buttons) to select the next or previous Category.

When in Alphabetical Sort Mode:
- Use the *BANK* buttons (*SHIFT + PROGRAM* buttons) to select the the next or previous initial letter.

Editing a Program

Editing a program is easy, just start turning the knobs and buttons.

- The LCD window will breifly show the selected parameters name and setting.

- A ✳ symbol next to the program number will indicate that the current settings are not saved.

Storing a Program

To store a Program without changing Program name or category:

1 **Press the** *STORE* **button**
The Store button
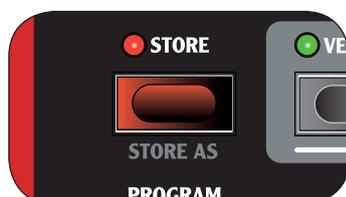
LED starts flashing, and the Program location is shown in the *LCD WINDOW*.

⚠️ *Press SLOT A or SLOT B buttons at any time to cancel the procedure.*

2 **Select a location**
Use the *PROGRAM* buttons or the *LCD*-dial to choose a Program location.

3 **Press the** *STORE* **button to confirm**
The selected Program is overwritten.

To store a Program and change the Program name and/or Category:

1 **Press the** *SAVE AS* **button (***SHIFT + SAVE***)**
The store button LED starts flashing and the Program category and name is show in the *LCD WINDOW*.

⚠️ *Press SLOT A or SLOT B buttons at anytime to cancel the procedure.*

2 **First, use the** *LCD-DIAL* **to select a category, then give your program a name using the** *PROGRAM* **buttons to change letter position, and** *LCD-DIAL* **to scroll between letters and numbers.**

3 **Press the** *STORE* **button to confirm the Product name**
The Program category is show in the *LCD WINDOW*.

4 **Press the** *STORE* **button to confirm Program Category & Name**
The Program location is shown in the *LCD WINDOW*.

Use the Program buttons or the LCD-dial to choose where to store the Program.

5 **Press the** *STORE* **button to confirm location**
The selected Program location is overwritten.

7. The Synth Section

The Synth Section is the area where knobs and buttons have a gray printed background. These knobs and buttons controls the sound engine of the Nord Wave.

There are two sound engines available simultaneously, though they are edited via the front panels knobs and buttons one at a time. The *SLOT A* and *SLOT B* buttons are used to activate a Synth Sections, and to set Panel Focus. Please refer to page 11 for more information.

MONO MODE

With Mono Mode activated, the Nord Wave will function as a monophonic synthesizer, only one note can be played at any time.

Selector button

If you press a key without releasing the previous one:

- *MONO* setting will re trigger envelopes; the sound will "re-start" for each note you play.
- *LEGATO* setting will not retriever envelopes; the sound will "continue" with only a change in pitch.

GLIDE knob

If you press a key without releasing the previous one, the Glide parameter can be used to set the time interval for the pitch to seamlessly change to the new note. With a setting of zero the pitch will change instantly**.**

VIBRATO

The *VIBRATO* function will gradually introduce subtle to dramatic changes in pitch.

- *DLY1-3* setting will introduce changes over time. Time interval range from short to long.
- *A.T.* setting will introduce changes as you apply *AFTER TOUCH*.
- *WHEEL* setting will introduce changes as you operate the *MODULATION WHEEL*.

LFO (*LFO1* & *LFO2*)

The *LFO* is used to repeatedly modulate various parameters using a Low Frequency Oscillator; an oscillator generating various types of waveforms with very low pitch.

⚠ **You never hear the actual LFO, only the modulation of the selected parameter.**

There are two LFOs available, with slightly different features described below.

RATE knob

The *RATE* knob is used to set the frequency of the LFO; the time it takes for the waveform to restart.

⚠ **The** *RATE LED* **will indicate each time a waveform is started.**

Waveform selector

The Waveform Selector button determines what waveform is generated by the LFO.

Waveform	Description	LFO 1	LFO 2
⊓_	**Square** Used for abrupt modulation changes, suitable for trills, distinct tremolos, etc.	Yes	Yes
⟍	**Sawtooth** Used for ramp type modulations.	No	Yes
⟋	**Inverted Sawtooth** Used for ramp type modulations.	Yes	No
⟋⟍	**Triangle** Creates natural vibrato effects and also used for classic pulse width modulation.	Yes	Yes
⌐⌐⌐	**Stepped Random** Creates abrupt modulation with random intensity.	Yes	Yes
⌇	**Smooth Random** Creates a smooth random modulation.	Yes	Yes

LFO Destination selector

The LFO Destination determines what parameter is modulated.

Destination	Description	LFO 1	LFO 2
FILTER	Modulates the Filter Frequency parameter (FREQ knob).	Yes	Yes
RES	Modulates the Filter Resonance parameter (RES knob).	No	Yes
PAN	Modulates the difference in amplitude between the left and right output.	Yes	No
OSC MOD	Modulates the Oscillator Modulation Amount parameter.	Yes	Yes
SHAPE	Modulates the Oscillator Shape parameter (SHAPE knob).	Yes	Yes
OSC1	Modulates the pitch of Oscillator 1.	Yes	Yes
OSC2	Modulates the pitch of Oscillator 2.	Yes	Yes

AMOUNT knob

The *AMOUNT* knob sets the intensity of the modulation. A setting of 0 will produce no modulation.

POLY mode

In Poly mode each note has its own LFO. Poly mode is activated by pressing the *POLY* button (*SHIFT* + Waveform Selector button).

⚠ *Poly mode is available to LFO 1 only.*

SINGLE mode

With single mode activated, the LFO plays a single cycle waveform once without repeating.

⚠ *Single mode is available to LFO 2 only.*

Modulation Envelope (*MOD ENV*)

The Modulation Envelope is used to modulate various parameters using an Envelope with Attack and Decay or Release parameters.

Please refer to page 18 for general information on envelopes.

ATTACK knob

Use the *ATTACK* knob to set the time interval of the Attack part of the Envelope. With a setting of zero the Attack Level will start instantly.

DEC/REL knob

Dependant on the *AR* setting, this knob has different functions:

AR setting disabled
The *DEC/REL* knob controls the time interval of the Decay part of the envelope.

AR setting enabled
The *DEC/REL* knob controls the time interval of the Release part of the envelope.

AR button (*SHIFT* + Destination Selector button)

The *AR* button toggles the envelope Attack/Release mode:

- When disabled the *DEC/REL* knob controls the envelope's Decay parameter. The envelope's Sustain Level is set to null.

- When enabled the *DEC/REL* knob controls the envelope's Release parameter. The envelope's Sustain Level is set to full.

AMOUNT knob

The Amount knob sets the intensity of the modulation.

- A setting of 0 will produce no modulation.

- A negative value will produce a negative modulation.

- A positive value will produce a positive modulation.

Envelopes

Envelopes are used for altering various parameter settings over time, using the time you press and release a key as trigger points.
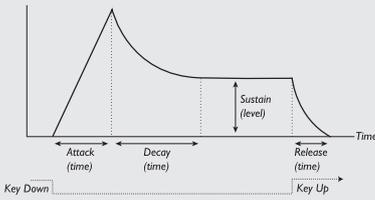
- When a key is pressed, the envelope starts at its base level, and gradually fades to full during the time set by the Attack Time (*ATTACK* knob).

- Once reaching full, the envelope will gradually fade to the Sustain Level (*SUSTAIN* knob), during the time set by the Decay Time (*DECAY* knob).

- When the key is released, the sound will gradually fade to zero during the time set by the Release Time (*RELEASE* knob).

Use the Attack parameter to set the time interval for the Attack part of the Envelope. With a setting of zero the Attack Level will start instantly.

Use the Decay parameter to set the time interval for the Decay part of the Envelope. With a setting of zero the Sustain Level will start instantly after the Attack part of the Envelope.

⚠ **With the Sustain Level set to full, operating the *DECAY* knob will have no effect.**

Use the Sustain parameter to set the level of the Sustain part of the Envelope. With a setting of zero the sound will be silent after the Decay part of the envelope.

Use the Release parameter to set the time interval for the Release part of the Envelope. With a setting of zero the envelope will instantly reach zero as you release the key.

⚠ **With the Sustain Level set to zero, operating the Release knob will have no effect.**

⚠ **Using a time setting of zero can produce clipping sounds to occur; to eliminate any click, just increase the Time setting slightly.**

There are a total of four envelopes available:

Amplifier Envelope (*AMP ENV***)**
The Amplifier Envelope is the most important one; it controls the amplitude of your sound and is used to give the sounds its basic "shape".

- The envelope's base relates to null amplitude and spans to the level set by the *OUTPUT LEVEL* knob.

Please refer to page 23 for more information.

Filter Envelope
The Filter Envelope controls the Filter Frequency parameter and can be very dramatic.

- The envelope's base relates to the Filter Frequency set by the *FREQ* knob, and spans to the intensity set by the Filter's *ENV AMT* knob.

Please refer to page 25 for more information.

Modulation Envelope (*MOD ENV***)**
The Modulation Envelope is very powerful as you select what parameter to control. It is a simplified envelope with only Attack and Decay or Attack and Release parameters.

The image above illustrates the modulation envelope with Attack and Decay parameters.
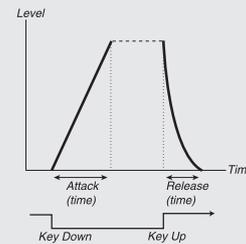
The image above illustrates the modulation envelope with Attack and Release parameters.

- The envelope's base relates to the current setting of the selected target parameter, and spans to the intensity set by the *ENV AMT* knob.

Please refer to page 17 for more information.

Sample Playback envelope
When Sample Playback (*SAMP*) is selected as Oscillator Waveform type a special decay only envelope is available to that oscillator only.
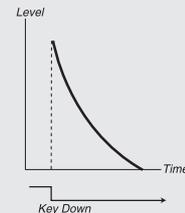
The image above illustrates the decay only envelope.

⚠ **By setting the *SHAPE1/DEC* knob to full the Decay parameter will have an infinite setting; the envelope will have no effect on your sound.**

Please refer to page 20 for more information.

Destination selector button

The Destination selector button is used to select the target of the modulation. .

Panel	Description
SHAPE2	The Shape parameter of *OSC2*
OSC1	The pitch of OSC1
OSC2	The pitch of OSC2
FILTER	The Filter Frequency parameter
OSCMIX	The OSC Mix parameter
OSCMOD	The Amount parameter of the Oscillator Modulation

⚠ *Note that both* OSC1 *and* OSC2 *can be selected simultaneously.*

Oscillator (*OSC1* & *OSC2*)

The Oscillator is the source of your sound, where the basic waveform is generated.

There are two Oscillators available, so that you can play two waveforms simultaneously. Further than just combining the output of the two Oscillators, one oscillator can also modulate the other, creating very complex and constantly changing waveforms.

The two oscillators have slightly different features described below.

Oscillator Waveform selector

The Waveform Selector button determines what type of waveform is generated by the Oscillator.

If the waveform is of multi-type you can use the Waveform Selector dial to further select what waveform should be generated. The LED window will show the currently selected waveform.

Please refer to "Oscillator Waveform Types" on page 20 for more information.

Shape parameter (*SHAPE1* & *SHAPE2/DEC* knob)

The Shape parameter is used for altering the waveform generated by the Oscillator. The exact functionality varies depending on what type of waveform is generated. Please

refer to "Oscillator Waveform Types" on page 20 for more information.

SEMI TONES **knob**

The *SEMI TONES* knob is used for changing the pitch of *OSC2* relative to *OSC1* in steps of semi tones, ranging from -24 (-2 octaves) to +24 (+2 octaves) semi tones.

⚠ *The red LED will briefly indicate a pitch setting of even octaves.*

FINE TUNE **knob**

The *FINE TUNE* knob is used for changing the pitch of *OSC2* relative to *OSC1* ranging from -0.5 to +0.5 semi tones.

⚠ *While having an equal* OSC MIX *setting, and a* SEMI TONES *setting of 0; slightly rasing or lowering the fine tune parameter will produce a "richer" sound.*

Oscillator Modulation (*OSC MOD*)

Oscillator modulation is all about having the waveform produced by *OSC2* modulating *OSC1*. *OSC1* will produce a richer waveform with more resonant harmonics the more modulation you apply.

⚠ *By changing the frequency of OSC2, you change the harmonic content of OSC1 - not its frequency.*
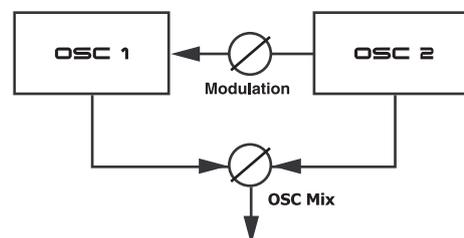
This is the same principle as FM-synthesis (described on page 21), but is far more powerful as you can have the oscillators set-up to produce any waveform you like - including sample playback.

Also the waveform produced by *OSC2* can be heard by using the *OSC MIX AMOUNT* knob.

There are two types of modulation available: Frequency Modulation (*FM*) and Phase Modulation (*PM*).

Frequency Modulation (*FM*)

Frequency Modulation generates more frequency bands and the resulting sound is normally perceived as rawer and brighter. The harmonic content changes drastically depending on in what note range you play.
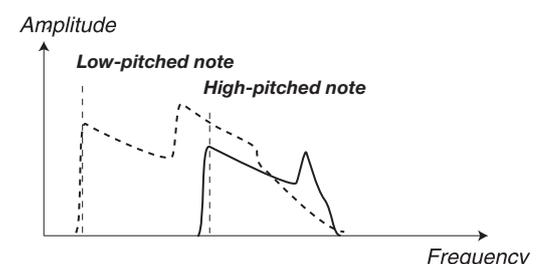
The image above illustrates the harmonic content for a low-pitched note and a high-pitched note using Frequency

Oscillator Waveform Types

Oscillators are used for generating various kinds of waveforms; these waveforms are the foundation or starting block of your sound.

Pulse

The default Pulse waveform is available to *OSC1* and *OSC2* and has a hollow character with only odd harmonics, but can drastically change as the with of the pulse is altered.

• The *SHAPE* knob is used for changing the pulse with from 50% to 1%.
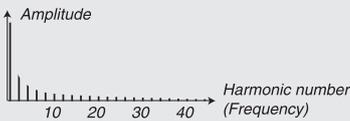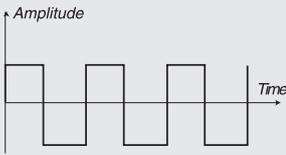
The image above shows the Pulse waveform at 50% width. Only odd harmonics are present.
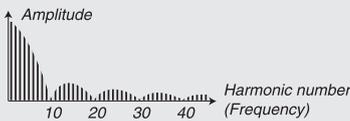
The image above shows the Pulse waveform at 10% pulse width. Now, also even harmonics are gradually introduced making the sound "sharper" but also "thinner".
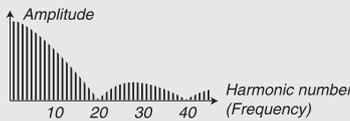
The image above shows the Pulse waveform at 1% pulse width. The narrower the pulse width, the more harmonics are introduced.

⚠ **If you modulate the Shape value using an LFO, you can get very nice "synthesized strings".**

• If *OSCILLATOR SYNC* is activated, the *SHAPE* knob is used for controlling the pitch of the Sync Oscillator. The pulse width is locked at 33%.

Sawtooth

The Sawtooth waveform is available to *OSC1* and *OSC2* and produces a very rich sound containing all harmonics.
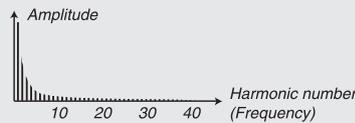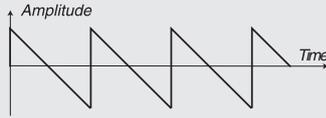
The image above shows the default Sawtooth waveform containing all harmonics.

• The *SHAPE* parameter has normally no function.

• If *OSCILLATOR SYNC* is activated, the *SHAPE* knob is used for controlling the pitch of the Sync Oscillator.

Triangle

The Triangle waveforms is available to *OSC1* and *OSC2* and has only odd and not very strong harmonics.
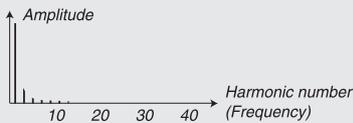
The image above shows the Triangle waveform.

• The *SHAPE* parameter has normally no function.

• If *OSCILLATOR SYNC* is activated, the *SHAPE* knob is used for controlling the pitch of the Sync Oscillator.

Wavetable

Wavetables (*WAVE*) are available to *OSC1* and are single cycle sampled waveforms that provides rich and interesting timbres of various tonal characteristics.

There are 32 Wavetables available.

• Use the *LED*-dial to select Wavetable. The name of the selected

Wavetable is briefly shown in the *LCD* window.

• The *SHAPE* parameter has no function.

Sample Instruments

Sample Instruments (*SMPL*) is available to *OSC2* and holds up to 99 Sample Instruments containing key-layered samples (recorded audio data) stored in the Flash memory area.

A large selection of high quality samples are installed when shipped from the factory, and even more can be downloaded free of charge from the Clavia web site.

• Use the *LED*-dial to select Sample Instrument. The name of the selected Sample Instrument is shown in the *LCD WINDOW*.

⚠ **A flashing -- character in the** *LED DISPLAY* **indicates that no Sample Instruments are available in the Flash area.**

There is a special *OSC2* only, amplitude decay envelope available in Sample Instrument mode. Use the *SHAPE2/DEC* knob to control the decay time of the *OSC2* amplitude envelope.

• When the *SKIP SMPL ATTACK* (*SHIFT* + Waveform Selector button) is activated, playback will start at an alternative startpoint, skipping the attack part of the sound.

Sampled waves

Sampled waves (*SAMP*) are available to *OSC2* and are similar to wavetables, but are made out of recodings of acoustic instruments and still have the attack section of the sample present.
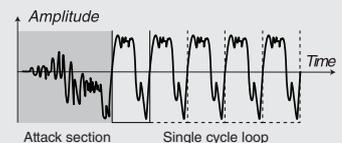
The image above shows the structure of a sampled wave.

• Use the *LED*-dial to select sampled wave.

• The *SHAPE* parameter has no function.

FM-Synthesis

FM-Synthesis (*FM*) is available to *OSC1* and *OSC2* and is all about having one Oscillator (referred to as the Carrier) being modulated by itself (using Feedback) or, by an additional Oscillator (referred to as the Modulator).
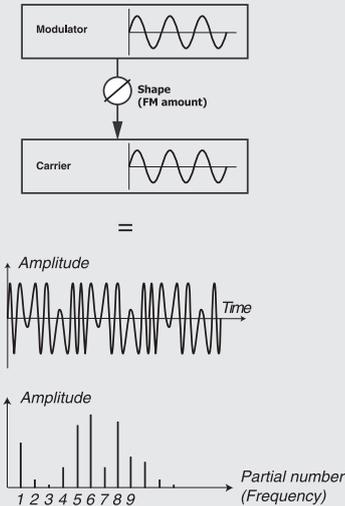
The image above shows a 2 Operator FM-Synthesis setup, and the resulting waveform using a fairly high FM amount setting.

The resulting waveform is far more rich in harmonics than the original Sine waveform, and drastic changes in tonal character are provided by altering the amount of modulation.

There are several FM algorithms available; set-ups with various number of oscillators, feedback and frequency ratio settings between the oscillators.

- Use the *LED*-dial to select FM-algorithm.

- The *SHAPE* parameter is used for setting the amount of modulation and/or feedback from none to full.
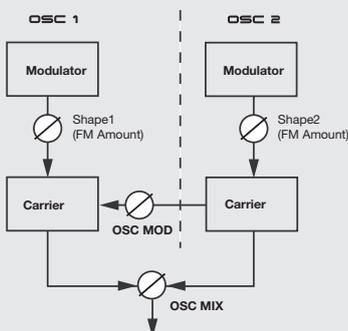
By combining *OSC1* and *OSC2*, up to 4 Operator FM-Synthesis is available, using Oscillator Modulation (*OSC MOD*) .

⚠ **Oscillator Modulation is described on page 19.**

Operators

A set-up with 2 oscillators (one Carrier and one Modulator) is referred to as 2 operator FM-Synthesis, indicated as 2-OP in the *LCD* window.

⚠ *Note that a single Oscillator (OSC1 or OSC2) in this scenario actually contains two oscillators.*

FM-algorithms using only 1 operator (Carrier only) is also available, indicated as 1-OP in the *LCD* window, and CR in the *LED* window.

Feedback

The first Operator in the chain can be given feedback to modulate itself, creating more complex modulations.

- The *SHAPE* parameter is used for controlling both the feedback and FM amount simultaneously.
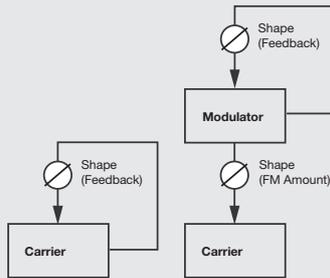
An FM algorithm using Feedback is indicated by showing (+FB) in the *LCD*, and a dot (.) in the *LED* window.

Frequency ratio

By giving the Modulator a different frequency relative to the Carrier, the resulting waveform continuously changes in harmonic content.
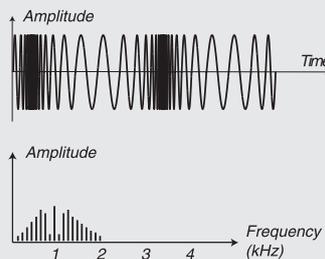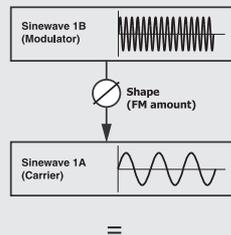
The Image above shows the Modulator having a frequency ratio of 9:1 relative to the frequency of the Carrier, and the resulting waveform using a fairly high FM amount setting.

Frequency Ratios are indicated by showing for example 9:1 in the *LCD*, and simplified 9 in the *LED* window.

Sine

The Sine waveform is not available as a selectable Waveform Type, but can be generated by setting the Waveform Selector to *FM* and setting the *SHAPE* parameter to null.
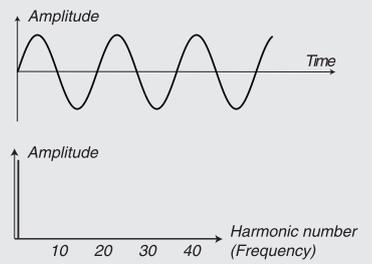
The image above shows the Sine waveform, generating only the fundamental harmonic.

Misc

The Misc category is available to *OSC1* and currently only holds the noise waveform, but various waveforms might be added in future upgrades.

Noise

The Noise waveform produces a noise type of sound (as oposed to a pitched sound generated by the other types of waveforms).
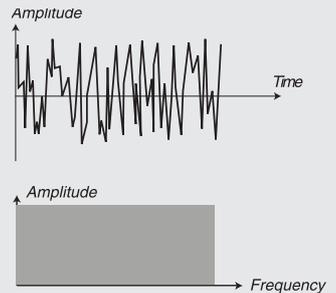
The image above shows the frequency content of the noise waveform; it is very close to that of white noise (where all frequencies are represented with equal energy).

- The *SHAPE* parameter is used to apply a 12db steep low pass filter to *OSC1* only.

Modulation.

⚠ *Some notes can sound more or less out-of pitch using high amounts of Frequency Modulation; this behavior is considered normal.*

Phase Modulation (*PM***)**
Phase modulation generates the same relative harmonic content regardless of in what note range you play, and is perceived as more fluent, similar to using keyboard tracking with the filter.
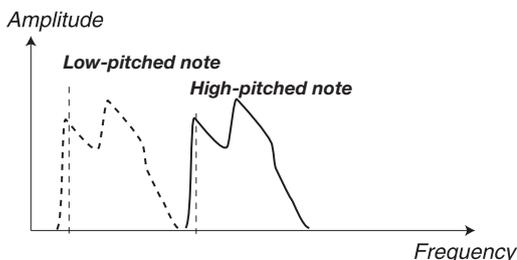
The image above illustrates the harmonic content for a low-pitched note and a high-pitched note using Phase Modulation.

AMOUNT **knob**
The *AMOUNT* knob controls the amount of modulation.

⚠ *A setting of null will produce no modulation.*

TYPE **button**
The type button selects the type of modulation; Frequency modulation (*FM*) or Phase modulation (*PM*). It is also used for turning Oscillator Modulation off (both LEDs are unlit).

Oscillator mix (*OSC MIX*)

MIX **knob**
The Oscillator Mix parameter is used for setting the balance in amplitude between Oscillator 1 and Oscillator 2.

With a setting of either *OSC1* or *OSC2*, only the corresponding oscillator will be heard.

⚠ *Due to differences in the harmonic content produced by the two oscillators, their amplitude levels can be perceived as unequal though the* OSC MIX *parameter is set to an equal mix; this is considered normal.*

Oscillator Sync (*SYNC*)
When *OSC1* is set to produce either pulse, triangle or saw waveforms, oscillator sync is available by activating the *SYNC* function (*SHIFT* + Waveform Selector button).

When the *SYNC* function is activated an additional oscillator is available. Each cycle of the waveform produced by the additional oscillator will restart the waveform generated by the main oscillator.

Only the output of the main oscillator is heard, but since its waveform is constantly restarted, it produces a richer harmonic content.

By altering the frequency of the main oscillator, a different harmonic content is produced.

• Use the *SHAPE* knob to change the frequency of the main oscillator.

Oscillator (non-synched)

Sync oscillator

Oscillator (synchronized)

Oscillator at higher frequency (synchronized)
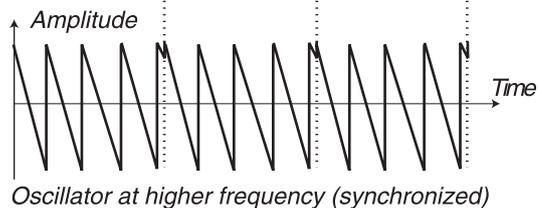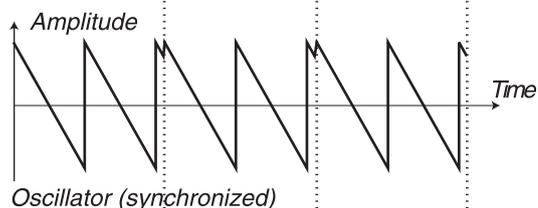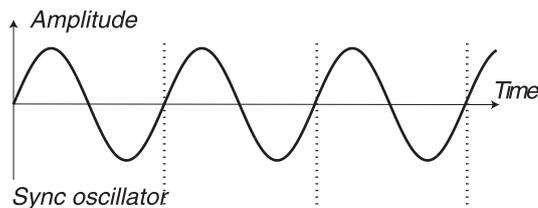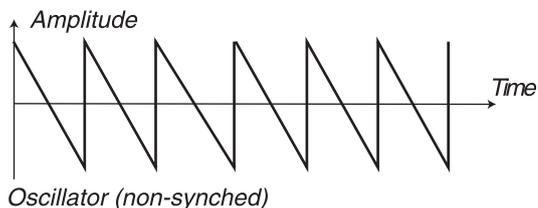
The image above illustrates a triangle waveform synchronized by a sine waveform.

The image above illustrates the harmonic content of the non-synchronized triangle waveform compared to the synchronized one in the previous example.

Amplifier Envelope (*AMP ENV*)

The Amplifier Envelope is used for controlling how the amplitude of your sound changes over time.

Please refer to page 18 for general information on envelopes.

⚠ **Simultaneously setting the Attack, Decay and Sustain parameters to zero will result in silence.**

ATTACK **knob**
Use the *ATTACK* knob to set the time interval for the Attack part of the Envelope. With a setting of zero the Attack Level will start instantly.

DECAY **knob**
Use the *DECAY* knob to set the time interval for the Decay part of the Envelope. With a setting of zero the Sustain Level will start instantly after the Attack part of the Envelope.

⚠ **With the Sustain Level set to full, operating the *DE-CAY* knob will have no effect.**

SUSTAIN **knob**
Use the *SUSTAIN* knob to set the level of the Sustain part of the Envelope. With a setting of zero the sound will be silent after the Decay part of the envelope.

RELEASE **knob**
Use the *RELEASE* knob to set the time interval for the Release part of the Envelope. With a setting of zero the envelope will instantly reach zero as you release the key.

⚠ **With the Sustain Level set to zero, operating the Release knob will have no effect.**

Filter

The Filter is one of the most important components for shaping the overall timbre of the sound. The Nord Wave features a selection of classical single mode filters as well as

some multi mode filters.

TYPE **button**
This *TYPE* button sets the filter type. Please refer to "Filter Types" on page 24 for more information.

Filter Frequency (*FREQ* **knob)**
The Filter Frequency is used for setting where - in the frequency range - the filter is introduced.
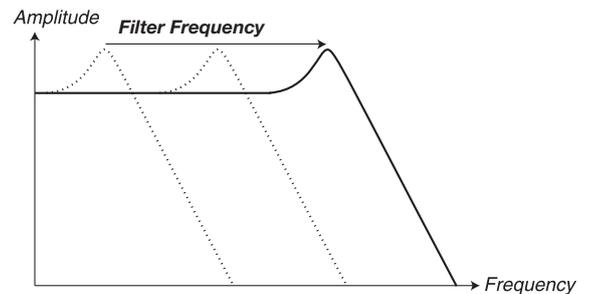
The Image above illustrates different Filter Frequency settings using a Low Pass filter.

⚠ **For Multi Mode filters the function of *FREQ* knob varies. Please refer to "Filter Types" on page 24 for more information.**

Filter Resonance (*RES* **knob)**
Filter Resonance is used to emphasize frequencies around the Filter Frequency, making the sound thinner. Further raising the Filter Resonance will make the sound resonant to a point where the filter adds a ringing quality to the sound. Exactly where in the frequency spectrum this "ringing" occurs, depends on the setting of the Filter Frequency.

⚠ **The functionality of the *RES* knob varies dependant on what type of filter is selected. Please refer to "Filter Types" on page 24 for more information.**

Keyboard Tracking (*KB TRACK* **button)**
Keyboard Tracking is used for changing the Filter Frequency depending on what note you play.
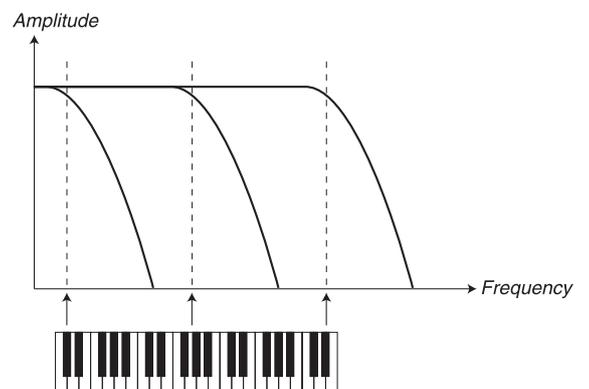
This is related to basic acoustics; if you raise the pitch of a waveform, the harmonics naturally raise in frequency. If the Filter Frequency is constant, the sound will be perceived as getting "muddier" the higher up the keyboard you play.

• With *KB TRACK* disabled, the Filter Frequency setting is constant regardless of where on the keyboard you play.

Filter Types

Low pass
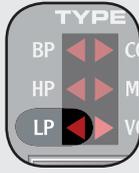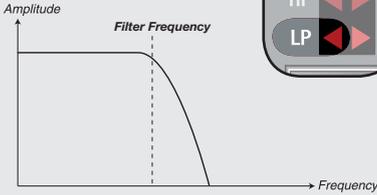
Frequencies above the Filter Frequency setting will be cut, lower frequencies will pass.

- The *FREQ* knob is used for controlling the Filter Frequency Cutoff.
- The *RES* knob is used for controlling the Filter Resonance.
- The *SLOPE* button is used for setting the filter slope.

High Pass
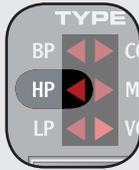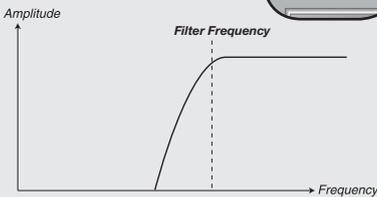
Frequencies below the Filter Frequency setting will be cut, higher frequencies will pass.

- The *FREQ* knob is used for controlling the Filter Frequency Cutoff.
- The *RES* knob is used for controlling the Filter Resonance.
- The *SLOPE* button is used for setting the filter slope.

Band Pass
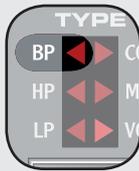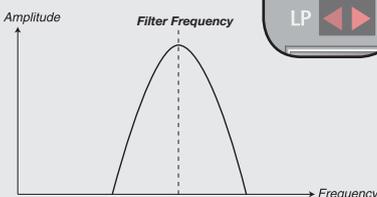
Frequencies at the Filter Frequency setting will pass, frequencies above and below will be cut.

- The *FREQ* knob is used for controlling the Filter Frequency Cutoff.
- The *RES* knob is used for controlling the Filter Resonance.

- The *SLOPE* button is used for selected the filter slope.

⚠ **The more Filter Resonance you apply, the narrower area of frequencies will pass.**

Comb
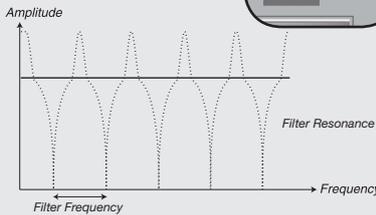
The Comb filter uses a delay line with feedback and sumation to phase out parts of the original signal.

A gentle modulation of the *FREQ* parameter will produce a classic phaser type effect.

- The *FREQ* knob is used for controlling the delay time; perceived as the frequency center of the effect.
- The *RES* knob is used for controlling the level of sumation and feedback. A setting of zero will produce no sumation or feedback and thus have no effect to the sound.
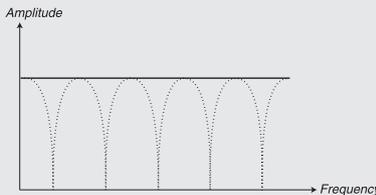
A Resonance setting of 0 to 5 will gradually introduce notches to the sound (sumation).
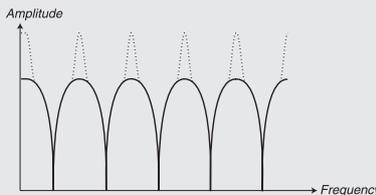
A Resonance setting of 5 to 10 will gradually introduce resonant peaks (feedback).

- The *SLOPE* button is used for setting the phase of the sumation.

⚠ **The Comb filter is best perceived with keyboard tracking (***KB TRACK***) set to off.**

Multi
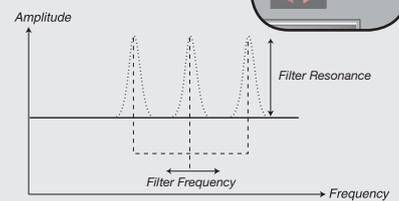
The Multi filter applies three resonant peaks with controlable center frequency.

- The *FREQ* knob is used for controlling the peaks center frequency.
- The *RES* knob is used for controlling the resonance . A setting of zero will produce no feedback and thus have no effect to the sound.
- The *SLOPE* button is used for setting the character of the filter.

⚠ **The Multi filter is best perceived with keyboard tracking (***KB TRACK***) set to off.**

Vocal
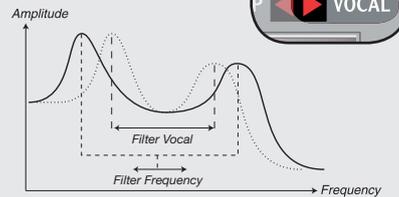
The Vocal filter uses two resonant peaks to give your sound an adjustable vowel character.

- The *FREQ* knob is used for controlling the Filter Frequency.
- The *RES* knob is used for controlling the distance between the filter peaks.
- The *SLOPE* button is used for controlling the filter resonance.

⚠ **The Vocal filter is best perceived with keyboard tracking (***KB TRACK***) set to off.**

• Whit *KB TRACK* enabled, the Filter Frequency setting will be higher for higher notes, and lower for lower notes relating to the key of C2.

• Using a *KB TRACK* setting of 1 will match the Filter Frequency to the key you play.

• Using a keyboard track setting if 1/3 the Filter Frequency will relate to 1:3 of the key you play.

• Using a keyboard track setting if 2/3 the Filter Frequency will relate to 2:3 of the key you play.

Filter Slope (*SLOPE* button)

The Filter Slope sets the attenuation force of the Filter; how steep the filter is introduced at the Filter Frequency.
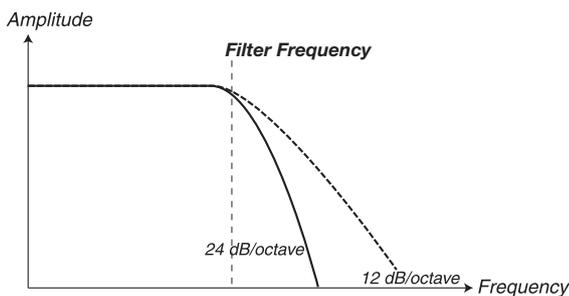
The image above illustrates the difference between the two modes using a Low Pass filter.

• The *SLOPE* button toggles the Filter Slope between 24db per Octave or 12dB per Octave.

⚠️ *The functionality of the Slope button varies dependant on what type of filter is selected. Please refer to "Filter Types" on page 24 for more information.*

VELOCITY button

The *VELOCITY* button sets the filter in Velocity mode. In Velocity mode the Filter ENV Amount will change depending on the note velocity data; the harder you play, the more effect will the Filter Envelope have on the Filter Frequency.

• The *ENV AMT* knob is used for setting the intensity of the change.
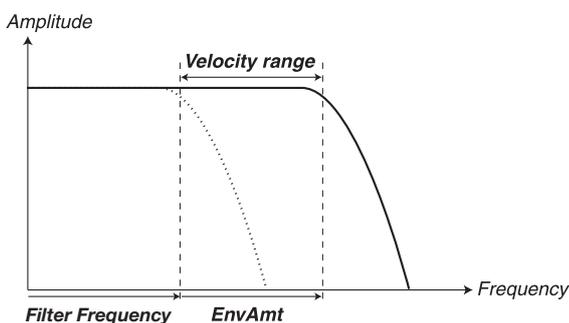
The image above illustrates how the *ENV AMT* knob enables note velocity to change the Filter Frequency.

Filter Envelope

The Filter Envelope is used for controlling how the Filter Frequency changes over time.
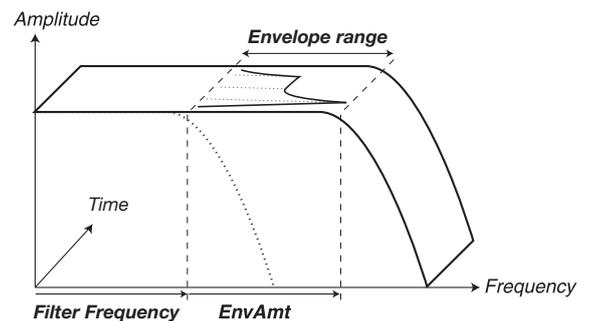
The image above illustrates how the Filter Envelope changes the Filter Frequency over time.

Please refer to page 18 for general information on envelopes.

⚠️ *Depending on the setting of the Amplifier Envelope, operating some Filter Envelope knobs may not produce an audible effect..*

⚠️ *Depending on the Amplifier Envelope and Filter Frequency setting, operating the Filter Envelope parameters may have no effect.*

Envelope Amount (*ENV AMT* knob)

Use the Envelope Amount to set the intensity of the Filter Envelope, or if *VELOCITY* is activated, the intensity of which note velocity changes the Filter Frequency.

⚠️ *With a setting of zero the Filter Frequency Cutoff will not be changed.*

ATTACK knob

Use the *ATTACK* knob to set the time interval for the Attack part of the Envelope. With a setting of zero the Attack Level will start instantly.

DECAY knob

Use the *DECAY* knob to set the time interval for the Decay part of the Envelope. With a setting of zero the Sustain Level will be reached instantly after the Attack part of the Envelope.

⚠️ *With the Sustain Level set to full, operating the DE-CAY knob will have no effect.*

SUSTAIN **knob**
Use the *SUSTAIN* knob to set the level of the Sustain part of the Envelope. With a setting of zero the envelope will reach zero after the Decay part of the envelope.

RELEASE **knob**
Use the *RELEASE* knob to set the time interval for the Release part of the Envelope. With a setting of zero the envelope will instantly reach zero as you release the key .

⚠ **With the Sustain Level set to zero, operating the Release knob will have no effect.**

OUTPUT

LEVEL **knob**
The *LEVEL* knob is used for setting the amplitude.

⚠ *Note that the* MASTER LEVEL **controls the overall amplitude, where as the Output Level only controls the current Synth Section.**

Equalizer (*EQ*)

The 2-band equalizer is used for boosting or cutting frequencies in the sound. Range from -15dB to +15db.

TREBLE **knob**
Will cut or boost the treble frequencies of the sound.

BASS **knob**
Will cut or boost the bass frequencies of the sound.

CHORUS

Chorus is an effect that applies small variations in pitch between the Left and Right channel.

⚠ *The Chorus effect is very subtle in mono operation.*

There are 3 intensity and the off settings available, ranging from off (no LEDs is lit) to high (both LEDs are lit).

CHORUS **button**
Sets the intensity of the Chorus effect.

8. The Morph function

1 Press

2 Turn

3 Play
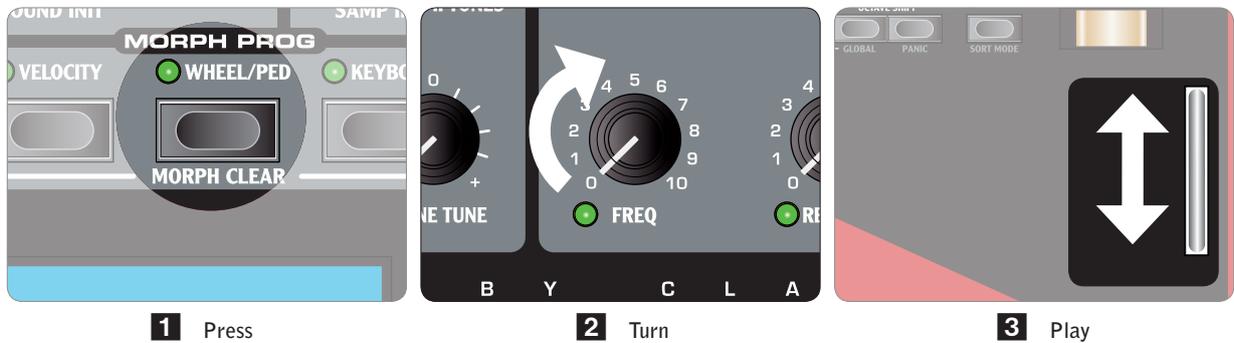
About Morphing

Morphing allows you to be very dynamic and creative in your sound design, and is all about seamlessly controlling virtually any sound related parameter from various sources such as the *MODULATION WHEEL* & *CONTROL PEDAL*, keyboard note or note velocity. These sources are referred to as a *Morph Source*.

Up to 20 paramters can be morphed at one time for *SLOT A* and *SLOT B* combined.

A Morph Source does not control the full range of the parameter, but the range from the parameters original position to a position you define when you set up the morph.

This means that you can control a very small range on one parameter at the same time as you control a very large range on a another parameter. Also one parameter can be controlled clockwise, and another counter clockwise.

Morph setups are saved within a Program.

Morph Sources

There are three *Morph Sources* available:

Modulation Wheel or Control Pedal *(WHEEL/PED)*
Uses the *MODULATION WHEEL* or pedal connected to the *CONTROL PEDAL* input as Morph Source.

• The bottom position of the *MODULATION WHEEL* or *CONTROL PEDAL* represents the parameters default value.

• The top position of the *MODULATION WHEEL* or *CONTROL PEDAL* represents the parameters morphed value.

Keyboard Note (*KEYBOARD)*
Uses the Keyboard Note Number as Morph Source.

• The bottom key of the *KEYBOARD* represents the parameters default value.

• The top key of the *KEYBOARD* represents the parameters morphed value.

⚠ *The top and bottom keys of the* KEYBOARD *are always used as reference, regardless of the* OCTAVE SHIFT *and* GLOBAL OCTAVE SHIFT *settings.*

⚠ *When using an external keyboard controller via MIDI IN, notes outside of the* KEYBOARD*'s range will morph the parameter further, until it reaches the parameters end positions.*

Note Velocity (*VELOCITY)*
Uses the Note Velocity as a Morph Source.

• A key velocity of 0 represents the parameters default value.

• A key velocity of 127 represents the parameters morphed value.

The Morph Source button's LED will indicate an active Morph Destination.

Morph Destinations

A Morph Source can control virtually any sound related knob, below referred to as a Morph Destination. Each Morph Destination has a green LED to indicate when a Morph is active.

Parameter name
LFO 1 Rate
LFO 1 Amount
LFO 2 Rate
LFO 2 Amount
MOD ENV Attack
MOD ENV Dec/Rel
MOD ENV Amount
OSC Shape 1
OSC Shape 2
OSC MOD Amount
OSC MIX
OSC SEMITONES
UNISON
AMP ENV Attack
AMP ENV Decay
AMP ENV Sustain
AMP ENV Release
FILTER Attack
FILTER Decay
FILTER Sustain
FILTER Release
FILTER Freq
FILTER Res
FILTER Env Amt
OUTPUT Level
DELAY Amount

Setting up a morph

Complex Morph scenarios are available, but they could not be made more easy to set up.

1 Hold down a Morph Source button.
Only the LEDs of the selected Morph Source's active Morph Destinations will lit.

2 Operate a Morph Destination parameter
The selected Morph Destination's LED will indicate that a Morph is active.

⚠ *You can cancel the Morph by operating the knob to the original parameter setting, where the LED will be unlit.*

3 Release the *MORPH SOURCE* **button.**

Clearing Morphs

To clear all morphs of a single Morph Source:
• Press *SHIFT* + the corresponding Morph Source button.

To Clear a single morph destination:
• Hold down the corresponding Morph Source button and operate the *MORPH DESTINATION* knob to its original position, where its LED will be unlit.

Morph Mode

Morph Mode provides a better overview for setting and adjusting multiple Morph Destinations at once.

1 Double-tap one of the Morph Source buttons.
The Morph Source button flashes continuously, and all LEDs are unlit, with the exception of the associated Morph Destinations.

⚠ *Press any of the Morph Source buttons to exit Morph Mode.*

While in Morph Mode you can:

• Operate any *MORPH DESTINATION* to set-up or adjust a morph.

• Hold down the *SHIFT* button and operate a *MORPH DESTINATION* to clear it.

Morph Examples

New to morphing? No worries, here you will find some easy examples to get you started. Lets say you want to:

Use the *MODULATION WHEEL* **to cross-fade between two sounds**

1 Set up your start scenario
Use *SLOT A* for your first sound, and *SLOT B* for your second sound. Turn down the *OUTPUT LEVEL* for *SLOT B*.

2 Morph the fade-out
With Panel Focus set to *SLOT A*, hold the *WHEEL/PED* button and turn *down* the *OUTPUT LEVEL*.

3 Morph the fade-in
With Panel Focus set to *SLOT B*, hold the WHEEL/PED button and turn *up* the *OUTPUT LEVEL*.

4 Play!
Set Keyboard Focus to both *SLOT A* and *SLOT B* and operate the *MODULATION WHEEL* to fade between the two sounds..

9. MIDI

MIDI Menu

The MIDI menu is used for editing MIDI specific settings in the *LCD DISPLAY*. You access it by pressing the *MIDI* button (*SHIFT + SLOT B*).

• Use the *PROGRAM* buttons to change page.

⚠ *Hold a PROGRAM **button pressed down to scroll quickly.***

• Use the *LCD*-dial to change setting.

MIDI Control Local

Default value: ⊡N

Determines if the unit should respond to local controls (the Nord Wave *KEYBOARD, PITCH BEND, MODULATION WHEEL*, knobs and buttons etc).

⊡N	Local control is enabled.
⊡FF	Local control is disabled.

MIDI Channel

Default value: 1

Determines on which MIDI channel MIDI messages are transmitted and received via *MIDI IN* and *MIDI OUT*.

⊡FF	Messages are neither transmitted nor received.
1 - 16	Messages are transmitted and received on the selected MIDI channel.

MIDI Ctrl A Channel

Default value: AUTO(1)

Determines on which MIDI channel MIDI Control Change messages are transmitted and received via *MIDI IN* and *MIDI OUT* for *SLOT A*.

Since the Nord Wave with its two slots have more physical controls than there are available MIDI CC addresses, this and the following option allows you to transmit and receive the knobs and buttons from the two slots, on separate MIDI channels to e.g. a computer.

⊡FF	Messages are neither transmitted nor received.
AUTO(N)	Messages are transmitted and received on the same MIDI channel as the one set in the MIDI Channel option.
1 - 16	Messages are transmitted and received on the selected MIDI channel.

MIDI Ctrl B Channel

Default value: AUTO(2)

Determines on which MIDI channel MIDI messages are transmitted and received via *MIDI IN* and *MIDI OUT* for *SLOT B*.

⊡FF	Messages are neither transmitted nor received.
AUTO(N)	Messages are transmitted and received on the first available MIDI channel after the one set in the MIDI Channel option.
1 - 16	Messages are transmitted and received on the selected MIDI channel.

MIDI Control Change Mode

Default value: SEND & RCV

Determines how Control Change messages are handled via MIDI.

SEND & RCV	Messages are both transmitted and received.
RCV	Messages are received only.
SEND	Messages are transmitted only.
⊡FF	Messages are neither transmitted nor received.

MIDI Program Change Mode

Default value: SEND & RCV

Determines how Program Change messages are handled via MIDI.

SEND & RCV	Messages are both transmitted and received.
RCV	Messages are received only.
SEND	Messages are transmitted only.
OFF	Messages are neither transmitted nor received.

⚠ *Program Change messages are transmitted on both SLOT A **and** SLOT B's **MIDI channel setting.***

MIDI Send CC

Press *STORE* to send all parameter settings as MIDI Continuous Controller messages on respectively slot's MIDI Channel setting.

⚠ *Messages are not transmitted if Slot MIDI channel setting is set to* OFF.

MIDI Dump One

Press Store to transmit the current Program as a Sysex Dump.

MIDI Send Bank

Press *STORE* to transmit the selected Program Bank as a Sysex Dump.

1 - 8	The selected bank is transmitted.
ALL	All banks are transmitted.

⚠ *The current Program needs to be saved, or it is excluded.*

MIDI Receive Bank

Press *STORE* to erase the selected Program Bank and wait to receive a Sysex Dump via MIDI.

1 - 8	The corresponding bank is erased.
ALL	All banks are erased.

⚠ *The selected Program Bank is erased even if no Sysex Data is received.*

MIDI implementation

MIDI implementation chart

Function	Transmit	Receive
MIDI Channels	1 - 16	1 - 16
Aftertouch	Yes	Yes
Pitchbend	Yes	Yes
Control Change	Yes	Yes
Program Change	Yes	Yes
System Exclusive	Yes	Yes

10. System settings

System Menu

The System Menu is used for editing system specific settings in the *LCD WINDOW*. You access it by pressing the *SYSTEM* button (*SHIFT + SLOT A*).

• Use the *PROGRAM* buttons to change page.

⚠ *Hold a* PROGRAM **button pressed down to scroll quickly.**

• Use the *LCD-DIAL* to change setting.

Transpose
default value: 0

–6 - +6	Transposes the keyboard in steps of 1 semi note.

Fine tune
default value: 0

–50 - + 50	Fine tunes both Synth Panels in steps of 1 Cent.

Sustain Pedal Polarity
default value: CLOSED

OPEN	Open polarity; for use with a pedal with open polarity.
CLOSED	Closed polarity; for use with a pedal with closed polarity.

Control Pedal Type
default value: ROLAND

Here you can match the control pedal characteristics for various manufacturers.

ROLAND
YAMAHA
ERNIE BALL
FATAR

⚠ *If the manufacturer of your pedal is not listed above, you can try operating the pedal to it's end positions. The pedal range is briefly shown in the* LCD WINDOW *as a value between 0 and 100. Select the setting that best matches the range of your pedal.*

Control Pedal Destination
default value: MORPH

Controls the destination for the Control Pedal input.

VOLUME	Used to controll the overall volume.
MORPH	Used as a Morph source..

Display Mode Hold
default value: OFF

Determens for how long a parameter setting is shown in the *LCD WINDOW* when editing a program.

ON	Parameters are shown indefinatley.
OFF	Parameters are shown breifly.

Memory Protect
default value: ON

ON	Store function disabled.
OFF	Store function enabled.

11. Nord Wave Manager

Project

Sample #1   Sample #2   Sample #3

Audio file 01.wav   Audio file 02.wav
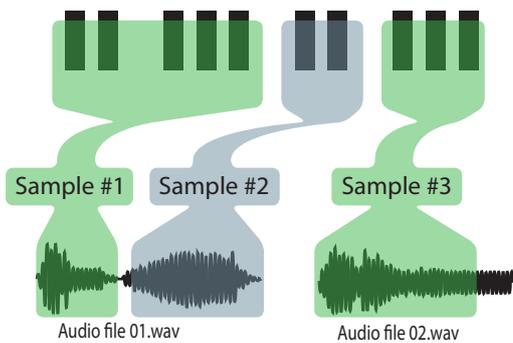
Sample Instrument

What is the Nord Wave Manager?

The Nord Wave Manager is the application that allows you to edit, create and load collections of samples - called Sample Instruments - to and from the sample memory area of the Nord Wave synthesizer. This area is what we call the Flash memory. The Manager will also act as a librarian utility for the Program memory area.

The Nord Wave Manager will assist you in your editing efforts; it contains powerful tools for various actions that can be applied to a sample. These tools will for instance help you in setting a start point of a sample, creating a loop and other tasks that are essential in making the samples ready for use in the Nord Wave. The Manager also has functions for automatic mapping of samples across the keyboard and much more.

Non-destructive editing

Any editing that takes place in the Nord Wave Manager software is completely non-destructive. The audio files on your hard disk will not be altered in any way even though the Nord Wave Manager will e.g. truncate samples before they are downloaded to the Nord Wave. The Manager links to the audio files, any alterations that you do to an original audio file will also affect how that file "behaves" in the Nord Wave Manager.

You should however try to keep a backup of, or use copies of the original audio files when you start to assemble the sample content for the Nord Wave. If you edit any audio file that is used by the Nord Wave Manager with some other application, that edit will also affect that particular file in the Nord Wave Manager.

Please note that when you download a set of samples to the Nord Wave, any other Sample Instrument that is related to the same "sample location" in the Flash memory will be erased in order to make room for the new one. Proceed with care and follow our Quick Tours and we'll make sure that you won't risk overwriting anything.

System Requirements

Windows PC

The Nord Wave Manager requires a computer with a CPU running at 233 MHz or better with a minimum of 128 MB RAM and Windows XP or Vista. Additionally you need one free USB (1.1) port plus a CD ROM drive to install the software from the CD, a keyboard, a mouse and a graphics display with an on-screen resolution of 1024 by 768 pixels and a 16-bit color or better graphics card.

Mac

The Nord Wave Manager requires a Mac with a Intel processor with one USB-port, a CD ROM unit to install the software, at least 128 MB RAM and OSX 10.4 or later.

Getting Started

Let's begin with a brief description of the terminology used in this chapter, followed by a typical workflow scenario to give you an overview of the functions of the Nord Wave Manager.

Project, sample memory

All the parts that are needed to assemble a sample waveform in the Nord Wave – references to audio files, samples, mappings, start-, stop- and loop markers etc. - are organized in Projects.

All Project related settings is done on your computer, and you can preview edits via the computer audio card. A Project links to the actual audio files on the hard drive, if you e.g. delete or edit an audio file that is included in a Project, that Project will be affected.

You can save Project files on the hard drive, just like any other computer file. When you are satisfied with a Project, you can generate a Sample Instrument, which can be downloaded to the Flash memory in the Nord Wave synthesizer. You can also upload the Sample Instruments that are in the Nord Wave to a Project, making it possible for you to save an unlimited amount of Sample Instruments on your hard drive.

WYDIWUH

What You Do Is What You Hear. Every function in the Nord Wave Manager can be applied to a sample in real time. If the sample is playing back through the computer audio card, you can e.g. listen to how the loop changes if you move the loop markers or if you adjust the crossfade settings or the start point of the sample.

Working offline

Project or sample editing does not require a connected Nord Wave synthesizer; you can create and edit Projects using only the computer and then connect to the synth at some other time in order to download the content of the Project to the Nord Wave.

Sample, Zone

When an audio file is added to a Project, it can be used as the source for one or several samples. A sample can be assigned to a range on the keyboard; this range is called a Zone. The sample parameters that determine the range of its zone is the Root Key and the Upper Key.

Sample Instruments, Program

A set of samples with zone settings is a Sample Instrument; the maximum number of zones in a Sample Instrument is 99. The Sample Instrument (also known as SI in this manual) can be selected in the Nord Wave OSC2 as a waveform and this together with all the other functions in the Synth area, becomes a Program. You can store up to 99 Sample Instruments in the Nord Wave Flash memory.

- *Tip: Any kind of sample may be assigned to any zone, which means that a Sample Instrument can consist of several different sounds, mapped across the keyboard. You can e.g. create a drum type Sample Instrument with one sound for each key, or create multiple splits by assigning different samples to different keyboard ranges – e.g. bass samples in the lower register, followed by piano samples higher up on the keyboard. The Nord Wave Manager has some very useful functions that will assist you in the mapping process.*

Sample editing, loop markers, crossfade

Setting a starting point for a sample to e.g. eliminate any unwanted audio at the beginning, is a one-click function in the Nord Wave Manager.

The Manager has some very powerful loop functions that make creating perfect, seamless loops a breeze. The loop makes it possible to use shorter samples that still can be played for a duration that is longer than the sample itself. The loop functions also includes a crossfade option that can be monitored in real time, with various options for the length, crossfade curves etc.

Generate, upload, download

When a Project is completed, you can generate a Sample Instrument and automatically download the wave data to the Flash memory in the Nord Wave. The real estate of the Flash memory has the capacity of 180 MB and to keep track on how much room you have left, there is an indicator in the Nord Wave Manager that will help you to manage the available space. Every sample in the Sample Instrument will be encoded in the Nord Wave Manager before it is downloaded to the Wave with Clavia's lossless compression algorithm that can reduce the size a sample to up to a third of its original size.

Librarian

The Nord Wave Manager can also function as a Librarian for the Program memory in the Nord Wave. You can move Programs to new locations, you can save Programs to your hard drive; make sure that the order in the Program memory is exactly how you want it to be and also be able to share Programs and Sample Instrument with fellow Wave users.

Installation

Installation of the USB driver

Before the Nord Wave synthesizer can communicate with a Windows PC, you need to install a Clavia USB driver for the Windows operating system. Mac users may skip this paragraph.

To install the USB driver, follow these instructions:

1 Insert the 'Nord Wave CD' installation CD into the CD-ROM drive or get the driver from the Nord Wave download area at www.clavia.se.

2 Connect the USB cable between the synth and the computer and switch on the synth.
The 'Found New Hardware' wizard should appear, accompanied by its reassuring alert sound.

3 Let the wizard search the installation CD for the USB driver and install it, or point the wizard to the folder where the driver is.

Installation of the Nord Wave Manager, Windows PC

1 Insert the 'Nord Wave CD' CD into the CD-ROM drive.

2 Run the Install Nord Wave Manager.exe and follow the instructions in the setup program.

3 The Nord Wave Manager will be installed in a folder named Clavia in the Program Files folder on the hard disk.
During the installation you will have the option to select an alternative location for the software.

4 Confirm every window in the installation procedure by clicking on the Next button. The installation may be aborted at any time by clicking on Cancel.

When the installation is complete, click the Close button to return to the Windows desktop.

Installation of the Nord Wave Manager, Mac OSX

1 To install the Nord Wave Manager, simply drag the Nord Wave Manager application located in the Nord Wave folder from the installation CD to the Applications folder on the Macintosh's hard disk.

The Quick Tours

Let us go through a few things we know you are curious about and get acquainted with the Nord Wave Manager at the same time.

First Light

1 Make sure that the Nord Wave is powered up, and connected to the computer to a USB port.

2 Launch the Nord Wave Manager from the Clavia folder or the Start Menu (PC) or from the Applications folder (Mac OSX).
During the start-up procedure, the Manager will automatically try and establish contact with the Nord Wave synthesizer.

If a Nord Wave is not connected, you can still work on a Project with sample editing, mapping and other functions. When the Manager finds a Nord Wave, this will be indicated at the lower, right corner of the Manager window and the Nord Wave tab will open automatically. A list with all the current Sample Instruments in the Flash memory will appear in the Nord Wave Manager window.

● *Tip: In order for the Nord Wave Manager to be able to playback samples, you need to select a driver for your audio card. This is done in the Settings/Audio menu.*

⚠ *Note: On a XP or Vista system, select an available Direct X driver. In order to be compatible with as many XP or Vista computer systems as possible, the Nord Wave Manager uses Direct X drivers.*

Download Sample Instruments or Programs to the Nord Wave

You can find new Sample Instruments and Programs at the www.clavia.se website. These can be downloaded from the website free of charge. Here's how to download a Sample Instrument to the Nord Wave:

1 Browse to www.clavia.se and go to the Nord Wave Download area.

2 Select the Sample Instrument that you wish to get and save the file to a folder on your hard drive and un-zip it.
The file extension of the un-zipped file will be .nwi for Sample Instruments (.nwp are Programs). Read more about the different file formats that the Nord Wave Manager uses on page 49.

3 In the Nord Wave Manager, open the Nord Wave tab and select Instruments in the drop down list.

4 Enable the Expanded option and you will see a grid with all the available memory locations.
To add new Sample Instruments to the Wave, just drag the files from the hard drive to an empty location in the list of Sample Instruments in the Nord Wave tab.

⚠️ *Note: When you download one or several Sample Instruments from the Nord Wave Manager to the Nord Wave synthesizer, the memory locations in the synthesizer Flash memory will be overwritten, by any new Sample Instruments that are assigned to those specific locations. Just drop new SI:s in empty locations and they will be added to the Flash memory.*

Upload Sample Instruments or Programs from the Nord Wave

Using the Nord Wave Manager, it is very easy to upload SI:s or Programs from the Wave to the computer hard drive. These actions also take place in the Nord Wave tab, in the Manager.

1 Open the Nord Wave tab and select either Instruments or Program in the drop down list.

2 Right-click on a SI or Program and select Upload.
The data will be saved in a folder that you can assign as the Backup folder for the Nord Wave Manager – the default location will be same folder as the Manager application lives in. Sample Instruments will be saved as .nwi files, Programs as .nwp files. Read more about the file types the Wave and the Manager uses on page 49.

● *Tip: By combining the techniques for down- and uploading the Sample Instruments and Programs, you are now also able to share Sample Instruments and/or Programs with other Nord Wave users if you wish.*

Create a new Sample Instrument

Time to get creative; let's create a new Sample Instrument.

1 Copy the NW_demo1.wav file from the Nord Wave CD to the folder where the Nord Wave Manager is installed.
You may of course use any other audio file in the .wav format but this particular file will demonstrate a very powerful feature of the Nord Wave Manager.

2 Open a new Project from the File menu.

You can continue to work in a current Project or open a new Project from the File menu. Only one Project can be open, you will be prompted to save any changes before any Project that has been edited is closed.

● *Tip: A quick way to open a new Project is to hit Ctrl+N on the computer keyboard. Ctrl+S will save the current Project. The name you give to a Project will also be the name of the Sample Instrument that is downloaded to the Nord Wave.*

3 Select the Audio File/Assign tab.
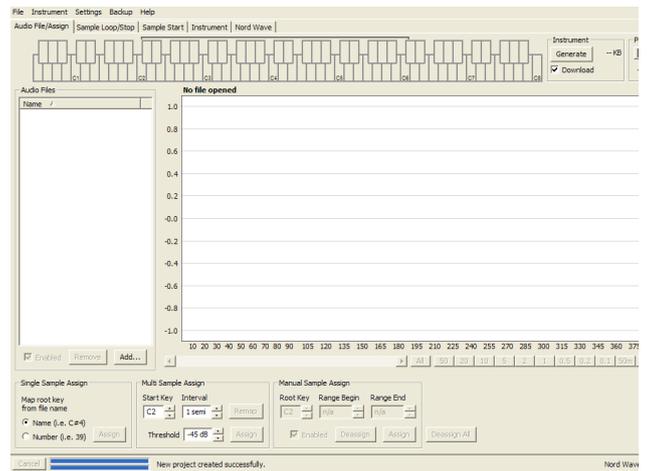
4 Click on the Add button below the Audio Files area or type Ctrl+F. Browse to the location of the NW_demo1.wav file and click Open.
The two progress bars at the lower left corner of the Project window will indicate that the file(s) are added to the Project. The amount of time it takes to add one or several files will vary, depending on the file size(s) and your computer.
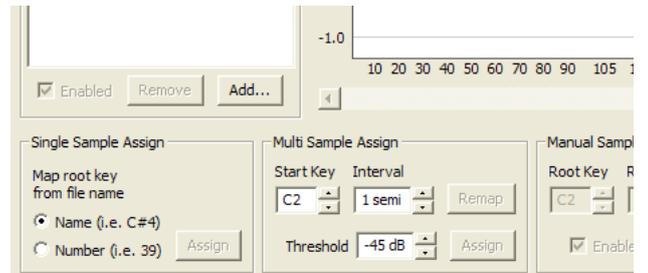
● *Tip: You can select and add several samples at once, as long as they are in the same location on your hard drive. To add all the audio files from an entire folder, use the Add Folder (Ctrl+D) command from the File menu.*

5 When a file has been added, you will see a representation of its content as a waveform graph in the Manager window.
Please note that the NW_demo1.wav is one file, which consists of several recorded notes from a Nord C1 organ. Nothing fancy, just some simple sounds to show you a cool feature. Let's do some magic now and have the Manager create several samples, mapped in Zones across the keyboard from this audio file.
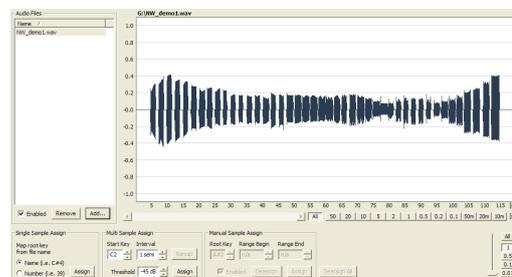
6 Locate the section labeled Multi Sample Assign at the lower part of the Manager window. Set the Start Note to C2, the interval to 1 semi, the Threshold to -45 dB and then click on Assign.
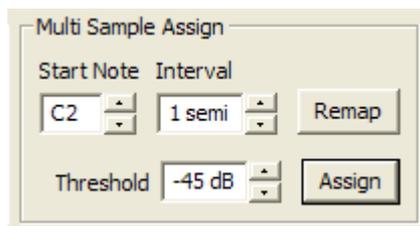
When the Nord Wave Manager has completed an analysis of the file, samples with Root Key and Upper Key settings are created and these settings are translated into zones. These zones will be indicated in the Keyboard Grid at the top of the Manager window.
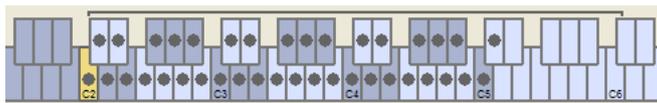
7 **The sample that is highlighted in yellow is the focused sample, which means that this sample is active for further editing and ready for playback.**

● *Tip: Pressing the space bar on the computer keyboard, or clicking on the* ▶ *symbol in the Player at the upper right corner will start the playback of the file.*

8 **The dot-marker on a key (●) in the keyboard display indicates that this is the Root Key of a sample. The sample is also assigned to the corresponding range that surrounds the dot-marked key, indicated in grey or blue.**
If you right-click on a dotted key, you can disable a sample temporarily from the Project which will be indicated with a circle (○). You can also de-assign the sample – this means that it will be removed from the Project.

● *Tip: Disabling a sample from a zone is a great way to determine how many samples you need in order to cover a particular range of a multi sampled instrument or sound. Any settings that have been made to a sample will be kept even if it is disabled. When you re-enable a sample, these settings will be restored.*

● *Tip: You can use the arrow keys on the computer keyboard to quickly move the focus from one sample to another.*

9 **Save the Project by selecting Save in the File menu or type Ctrl+S on the computer keyboard.**

Adding Audio files with individual samples

You may want to add audio files that only contain one sample each. Here is how you assign individual samples to Zones:

1 **Open a new Project, select the Audio Files/Assign tab and click the Add button.**

● *Tip: The Nord Wave can use stereo or mono audio files as sample sources, with up to 44.1 kHz sample rate, 16 bits resolution.*

2 **Navigate to a folder that contain the audio files you wish to use, select the files and click Open to add them to the Project.**

3 **The files will be listed, one by one in the Audio Files area. Select the first file that you wish to assign to a zone.**
The waveform graph will show a representation of the audio file.
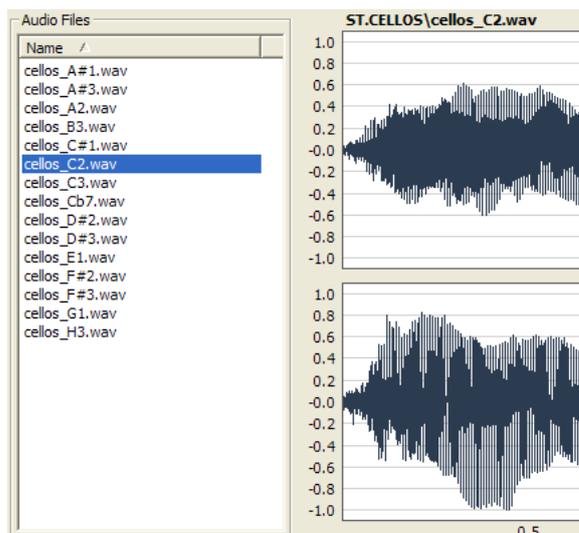
4 **Click and drag to select the entire waveform in the graph, and look at the Manual Sample Assign area in the lower part of the window.**
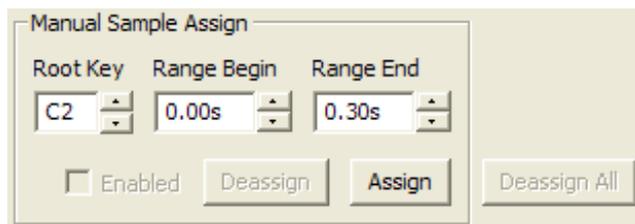
5 **Enter the Root Key; the key where the sample will play back at its original pitch, and click Assign.**

6 **Select the next file and click and drag in the waveform graph to select the entire audio snippet.**

7 **Enter the Root Key for the next sample/zone.**

⚠ *Note: The first zone that you create will span a range of two octaves above the Root Key. The range of a zone is determined by two parameters, the Root Key and the Upper Key for each sample. The range is also depending on any other sample that may be assigned further down on the keyboard. A zone's lower key will reach all the way down to any previous sample's Upper Key or the F0 key if it is the "first" sample assigned. A sample will always reach down to the previous sample's Upper Key.*

● *Tip: A zone in a range cannot be empty, i.e. without an assigned sample. If you want to have some keys that are silent somewhere in a Sample Instrument, just make a selection in the waveform graph of an area that is silent (or Add an audio file that is short, and contains no audio data). Then you map this silent sample to a range of keys.*

Single Sample Assign

If you have audio files on your hard drive where the file name contains an identifier or marker of the file's pitch, the Single Sample Assign feature can automatically map these samples.

1 **Use the Add function to add some audio files to the Project.**
The SSA can use identifiers that refer to a pitch name – if the file name is e.g. cello_C#4.wav – or note number – like e.g. cello_39.wav.

2 **Select all the files in the File List that has these indicators and click on Assign,**
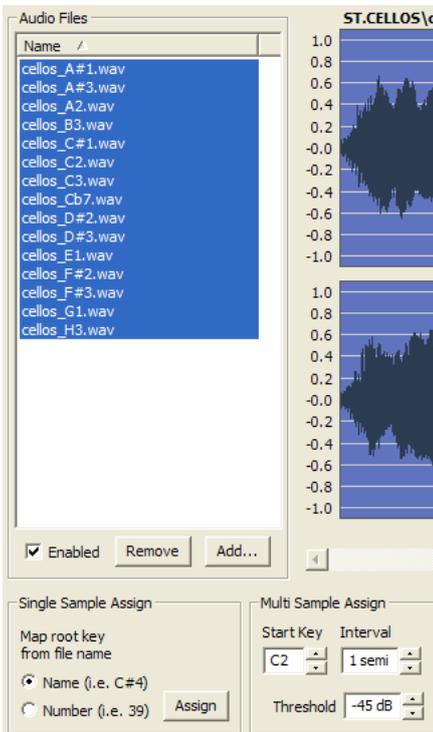
3 **The samples will be mapped in zones according to the markers in the file names.**

Editing

Let's continue to edit a sample; in order to prepare it a bit more before we download the Sample Instrument to the Nord Wave:

1 **Make sure that you have at least one sample in the Project and that this sample is assigned to a zone and in focus.**

2 **Click on the Instrument tab.**
This is where you can adjust the gain, and fine-tune the pitch of the entire Sample Instrument or any individual samples. You adjust these functions by entering values in the input boxes or by using the increment/decrement buttons.
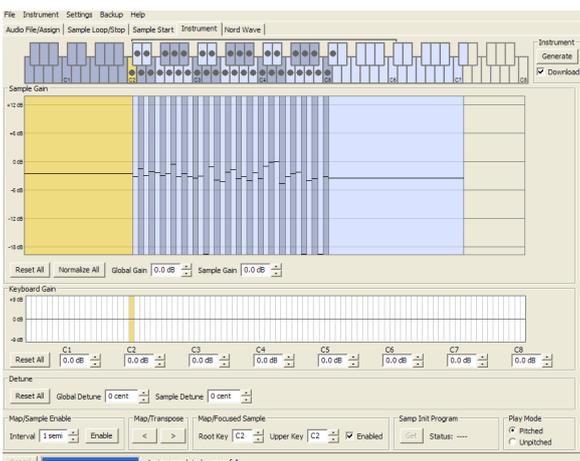
● *Tip: Move the focus by using the horizontal arrow keys on the computer keyboard.*

3 **Click on the Sample Start tab.**
This is where you can adjust the starting point of the sample. This is useful if you have audio files that contain unwanted material before the actual sound begins. The Nord Wave Manager will automatically place a starting point when a sample is assigned to a zone.

This marker, that is green in the waveform graph, can easily be changed if you prefer to have manual control of this function. You can manually set the start point by entering a value in the Start input box, using the slider or by simply clicking in the waveform graph.
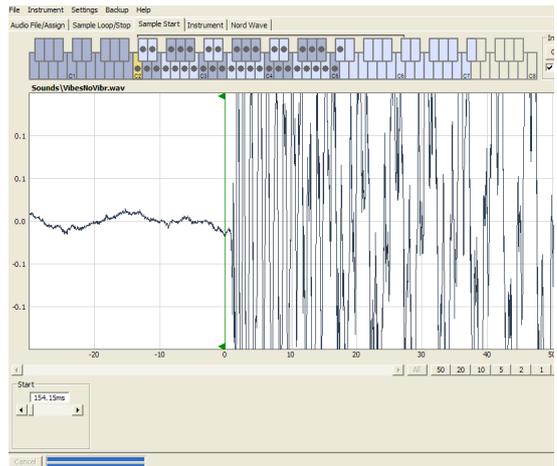
● *Tip: When the Sample Start tab is opened, the Manager will zoom in closer in the waveform graph to make it easier to distinguish noise from the actual sound. You can change the zoom settings by using the buttons below the waveform graph for the horizontal axis, and the slider or the buttons to the right, for the vertical axis.*

Looping

Loops are very useful in order to e.g. make a sample sound beyond its own length. Loops will also reduce a sample's size, since everything after the loop end marker will be discarded when you download a Sample Instrument to the Nord Wave.

Let's take a closer look at a loop.

A loop is automatically generated when a sample is assigned to a zone.

1 **To view or edit the loop settings, just click on the Sample Loop/Stop tab. The loop is indicated in the waveform graph as a colored area.**
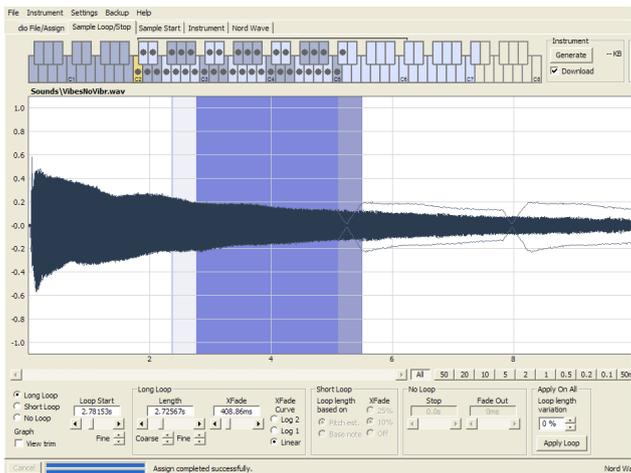
- *Tip: To set a new beginning of the loop - the loop Start marker - just click on the waveform graph. To set the length of the loop, just right-click anywhere to the right of the indication of the loop start. You can also enter values for these parameters in the input boxes or use the sliders.*

There are three loop options available, Long Loop, Short Loop and No Loop.
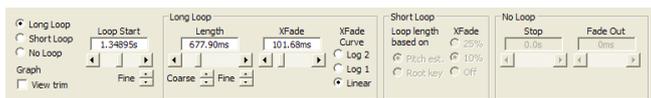
The Long Loop is useful for various instrument samples and sounds which contains non-periodic variations. When you select this loop, a loop start marker and a loop end marker are created. These two loop markers will be separated by the actual loop section which is indicated as the blue area in the waveform graph.

This loop will also include a crossfade to ensure that the loop will sound as smooth as possible. The two segments of the crossfade are indicated as the light grey area immediately before the loop start marker, and the darker area before the loop end marker.

- *Tip: Hit the space bar on the computer keyboard to start the playback and adjust the settings for the crossfade or move the loop markers by clicking in the waveform graph. What You Do Is What You Hear, any change you make will be monitored in real time during playback.*

The Short Loop will create a loop from one single period in the sample. This option will be very efficient in reducing the size of a sample, if you have concerns about making as many samples fit in the Nord Wave as possible, this should be explored.

The Short Loop uses either a pitch estimate or the Root Key as the reference for its length, since the length will have consequences on the pitch of the sound when it is looping.

- *Tip: If you can find a smooth short loop early in a sample, the envelope generators in the Nord Wave can be used to emulate a natural decay, and you can save lots of space in the Flash memory.*

The No Loop may seem self explanatory, but the important thing here is to remember that no sample data after the end marker will be downloaded to the Flash memory. Click on the waveform graph to position the end marker.

Please go to page 44 for a detailed description of all the functions in the Loop/Stop tab.

Generate a Sample Instrument

When you have added all the audio files to the Project and are satisfied with the sample edits, it is time to create a Sample Instrument and to download this to the Nord Wave.

1 **If you haven't saved your Project, now would be a good time to do so.**
By saving and giving a Project a name, you are also providing the name for the Sample Instrument when it is downloaded to the Flash memory.

- *Tip: If you change your mind about the current name on the Project, use Save As… to give it a new one. A Sample Instrument that is created from an unsaved Project will get the default name "Untitled" in the Nord Wave.*

⚠ *Note: A Sample Instrument name that is longer than 16 characters will be truncated when presented in the Nord Wave display. You can use the numbers 0-9, the letters a-z and A-Z and a hyphen (-) in the name. Any other characters in the Project name will be replaced in the Nord Wave LCD.*

2 **Go to the Instrument Menu and select Generate Only.**
A Sample Instrument with all the samples, zones and edits that you have made in this Project will be generated and automatically saved to the hard drive as a "Project name".nwi file.

3 **If you select Generate and Download, the Sample Instrument will also be downloaded to the Flash memory in the Nord Wave.**
Sample Instruments are added incrementally to the Flash memory, to the first available free location.
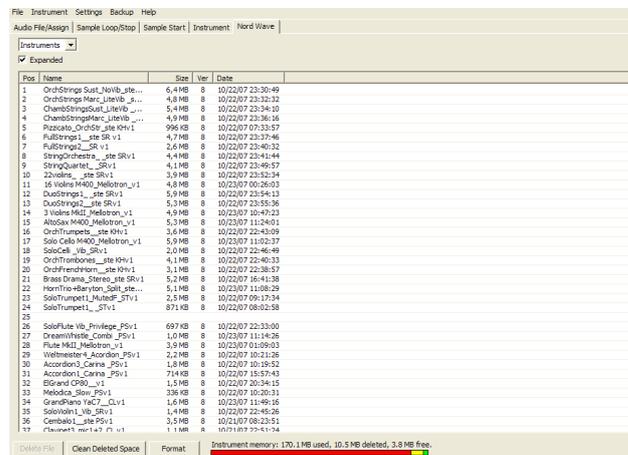
- *Tip: All of the tabs – except the Nord Wave tab – have an Instrument area, up to the right in the Manager window. If the Download checkbox is checked, the Sample Instrument will automatically be downloaded to the Nord Wave when it is generated.*

For more information on how use a Sample Instrument as Oscillator 2 waveform source, please go to page 20.

Program management

1 **Open the Nord Wave tab and select Instruments from the dropdown menu.**
A list with all the Sample Instruments in the Nord Wave will be shown. If you have generated and downloaded any new Sample Instrument for the first time from a Project to a Wave with the factory default

memories, it will be at the end of the list.

2 **If you right-click on a Sample Instrument you can upload it from the Wave to the backup folder on the computer.**
The file will be saved in the .nwi format, and may be shared with other Nord Wave users.

⚠ *Be careful with the Delete option, Programs may use the Sample Instrument, and they will most likely not sound the same if the SI is deleted.*

● *Tip: The list also has information on the size, the latest edit date and a version number of the Sample Instruments. This can be useful if you e.g. need to free up space in the Flash memory.*

3 **To add a previously saved Sample Instrument to the Nord Wave, just locate the file on your hard drive and drag this file to the desired location in the Nord Wave Manager.**
Check the Expanded option to view all the locations in the Flash memory.

22	HornTrio+Baryton_Split_ste...
23	SoloTrumpet1_MutedF_STv1
24	SoloTrumpet1_ _STv1
25	
26	SoloFlute Vib_Privilege_PSv1

Here, the location #25 is empty.

4 **Select the Programs option from the dropdown menu to activate the Program Librarian function.**
The Manager window is divided into two lists; each of these lists will contain the Programs in the Nord Wave. The lists are organized in the same Bank number, Program number fashion as the Nord Wave Program memory. You can select one bank at a time for each separate list with the Bank Selector dropdown menu.

● *Tip: The two Program lists make organizing and copying Programs between locations and banks easy. Decide which one you should consider as the "source" and the "destination" banks and just drag Programs from one to the other. Dragging in this manner will move the Program from the source bank location to the destination bank location. If you drop a Program on top of another Program, they will trade places with each other.*

⚠ *Note: The two lists are identical. They are simply two representations of the same memory area in the Nord Wave, to make organizing the Program memories between the banks as easy as possible. If you delete a Program from one of the lists (right-click on a program and select Delete), that Program will be deleted*

from the Nord Wave and also from the other list as well.

5 **Right-click on a Program in any of the lists and select Upload to backup folder.**
This will save the selected Program as an .nwp file to the hard drive. The hierarchy will look like this: Programs/Bank X. The necessary folders will be automatically created when you upload a Program to the hard drive.

6 **To add a previously saved Program to the Nord Wave, just locate the file on your hard drive and drag this file to the desired Bank in the Nord Wave Manager.**

Backup the original samples

Let's make a backup of the Sample Instruments that currently resides in the Flash memory in the Nord Wave.

1 **Launch the Nord Wave Manager and connect the Nord Wave to the computer and open the Nord Wave tab if it is not already open.**

2 **Go to the Settings menu in the Manager and select Backup Folder....**

3 **Choose the folder on your hard drive where you want to save the backups.**
This location can be changed at any time.

4 **Go to the Backup menu and select Backup...**

5 **The Nord Wave Manager will now suggest the location you have chosen in step 3. Confirm by clicking on Save, and the backup process will start.**

Backing up the entire Program and Flash memory content in this manner will take a few minutes, depending on the sizes of the samples. Backing up from the Nord Wave Manager is done in an incremental manner. Unless you change the name of the file that is written to the hard drive, only Sample Instruments and/or Programs that have been edited since the previous backup will be saved.

6 **To restore, just go to Backup/Restore and browse to a previously saved backup file (file extension .nwb) and click Open.**

This concludes our guided tour; we hope you have enjoyed the show so far. Now follows the Reference section where all the functions in the Nord Wave Manager will be explained in detail.

Nord Wave Manager File Reference

File Menu

In the Nord Wave Manager, the usual Windows XP and Mac OSX keyboard commands are available. The drop-down menus can be accessed by pressing the Alt key and the underlined letter in the menu bar.

Most of the commands can also be accessed by pressing the Ctrl (on the Mac - Command) key together with the letter shown next to the command name in the drop-down menus.

New Project [Ctrl+N]

Creates a new, empty Project window.

Open Project... [Ctrl+O]

Brings up the file selector and allows you to open a Project file from a storage device on the computer. If another Project is already open you will be prompted to save any unsaved changes before it is closed.

Save Project [Ctrl+S]

This command will save the current Project to a storage device on the computer. A Project file has the extension .nwp.

Save Project As...

This command will prompt you for a file name and destination folder before saving the Project to a storage device on the computer. This is useful for renaming a Project file before saving it, leaving any original Project intact on the storage device.

Close Project [Ctrl+W]

Closes the current Project. You will be prompted to save any unsaved changes before it is closed.

Add Files... [Ctrl+F]

Brings up the Add Files dialog where you select the audio files to be added to your project. Multiple files can be selected. The same functionality is available in the Audio File/Assign tab by pressing the Add button. The added audio files will appear in the Audio File/Assign tab, in the Audio Files list.

⚠️ *Note: Audio data is not copied to the actual Project when you add a file; a Project has only references to the audio files. Any changes you make to an original audio file on the hard drive will affect your project.*

Add Folder... [Ctrl+D]

Brings up the Add Folder dialog where you can browse to and select an entire folder to be added to your project. All supported audio files within that folder will be added. The added audio files will appear in the Audio File/Assign tab, in the Audio Files list.

The Nord Wave Manager can use audio files in the .wav format, up to a 16 bit, 44.1 kHz resolution.

Exit [Ctrl+Q]

Closes the Nord Wave Manager. You will be prompted to save any unsaved changes to an open Project.

Instrument Menu

Generate And Download [Ctrl+G]

Creates a Sample Instrument from the current Project and stores it on the hard drive as an .nwi-file. The Sample Instrument will also be downloaded to the first available Sample Instrument location in a connected Nord Wave.

This process automatically encodes the samples with Clavia's proprietary lossless compression algorithm, in order to reduce the sizes of the samples. Samples will also be cropped before the start points and after the loop end marker.

The duration of this process may take several minutes depending on the amount of samples being used. The file is saved in the folder you select as the backup folder. You can use this file to share your Sample Instrument with other Nord Wave users.

Generate Only [Ctrl+Y]

Creates a Sample Instrument from the current Project and stores it on the hard drive as an .nwi-file. This process automatically encodes the samples with Clavia's proprietary lossless compression algorithm, in order to reduce the sizes of the samples.

Samples will also be cropped before the start points and after the loop end marker. The duration of this process may last several minutes depending on the amount of samples being used. The file is saved in the same folder as your Project. Use this to share your Sample Instrument with others.

Get Samp Init Params [Ctrl+P]

This function fetches the currently active Program parameters from the Nord Wave. These parameters are then added to the Sample Instrument you are working on in the current Project.

If you then generate this Sample Instrument again and download it to the Nord Wave, these parameters can be recalled if you activate the Samp Init function on the Nord Wave.

Settings Menu
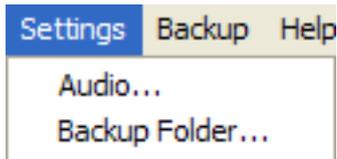
Audio...

Brings up the Audio Settings dialog box where you select the driver for any audio card that is connected to or installed in your computer. The output level can also be set in this dialog. The selected audio card will be used to play back samples by the Nord Wave Manager.

The Nord Wave Manager is compatible with Direct X drivers on a XP or Vista system, and with the native Mac OSX drivers.

Backup Folder...

Brings up a folder browser where you can select or create the folder on the hard drive where uploaded Programs and Sample Instruments will be stored. This is also the location where any Sample Instruments and Programs will be stored if you use the upload functionality when you right-click on a name in the lists on the Nord Wave tab.

Backup Menu
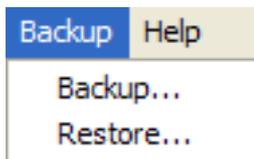
Backup

Makes a backup of all the Sample Instruments and the Programs in the Nord Wave. The resulting file will have the extension .nwb.

Backing up the entire Program and Flash memory content in this manner will take a few minutes, depending on the sizes of the samples. Backing up from the Nord Wave Manager is done in an incremental manner. Unless you change the name of the file that is written to the hard drive, only the Sample Instruments and/or Programs that have been edited since the previous backup will be saved.

Restore

To restore a previously saved backup, select this option and browse to a previously saved backup file on the hard drive (file extension .nwb) and click Open.

Help Menu
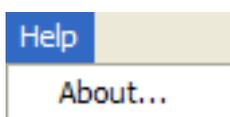
About...

Brings up the About box with information regarding the version of the Nord Wave Manager.

Nord Wave Manager Tab Reference

In order to be able to open any of the tabs, a Project must be open in the Nord Wave Manager. The only exception is the Nord Wave tab which opens as soon as the application is launched. Each tab opens up a set of functions that will assist you in mapping the samples, setting the start point of samples, loop the samples and to manage the Sample Instruments in the Flash memory and the Program memory in the Nord Wave.

- *Tip: You can select the different tabs one after each other, by typing Ctrl+Tab on the computer keyboard.*

Common area

The common area will be present at the top of all the tabs except for the Nord Wave tab. It contains functions that are used to view the mapping, to change the focus of the samples, to generate a Sample Instrument and to start and stop playback.

The Keyboard Grid

The Keyboard Grid represents the total keyboard range that the Zones can cover - from F0 to C8. The physical keyboard on the Nord Wave is indicated inside the large bracket above the keys. The middle C on the Nord Wave synthesizer - when the Octave Shift is set to 0 - is the C4 key, MIDI Note Number 60. If a Nord Wave is connected to the computer, any keys you play on the synth, will be indicated in the keyboard area of the Manager.

A key with a dot (●) indicates that a sample is assigned to this key and that the sample plays back at its original pitch. The Zone that this sample is assigned to is presented in a color scheme, with alternating blue and gray colors to separate the Zones from each other.

A key with a circle (○) indicates that the sample that has been mapped to this zone is de-assigned, but may be re-assigned with its settings intact.

A key that is yellow indicates that this sample is in focus - this sample is the active sample that you edit with the other functions in the Nord Wave Manager.

You can use the horizontal arrow keys on the computer keyboard to move the focus. When a sample is in focus, the audio file that the sample originated from will be automatically selected in the Audio File list and the corresponding part of the waveform in the graph will be also is presented in the yellow color.

Instrument area

This is a shortcut to the Generate functions that also is available in the Instrument menu. If the Download alternative is checked, clicking on Generate will generate a Sample Instrument from the current Project, and automatically download this to the Nord Wave.

Player

This contains two standard transport buttons, for starting and stopping the playback of the sample in focus. You can also set the output level from the audio card in your computer with the slider. Pressing the space bar on the computer keyboard will also start and stop the playback.

The Footer

The footer area at the bottom of the Nord Wave Manager window is also common for the tabs, except the Nord Wave tab with its librarian and memory management functions.

We will explain the special functions later on in this chapter in the Nord Wave tab section.

The footer contains mostly informational stuff, and a Cancel button that can be used to abort an ongoing process.

Progress bars

When you start a task in the Nord Wave Manager, the execution may take a few moments, depending on what it is you want to do. One major task may consist of several smaller tasks, and the progress of these is displayed with the Progress bars.

Cancel button

Use this button to cancel any ongoing task that the Nord Wave Manager is in the process of performing.

Upper Progress bar

The upper Progress bar will show the progress of the current task being performed, the name of which is displayed in the message area, to the immediate right of the Progress bar.

Lower Progress bar

The lower Progress bar will show the progress of all scheduled tasks.

Nord Wave

In the lower right corner is an indication that tells you if a Nord Wave is connected to the computer, or not.

Audio File/Assign Tab

This area is used to add audio files to your project, and assign sections within the audio file to be used as samples.

Several scenarios to automatically analyze and assign samples are available in the Nord Wave Manager. You can either add a group of audio files, where each file contains a single note and has a name identifying the note by name or number, or you can add a single file containing several notes one after the other.
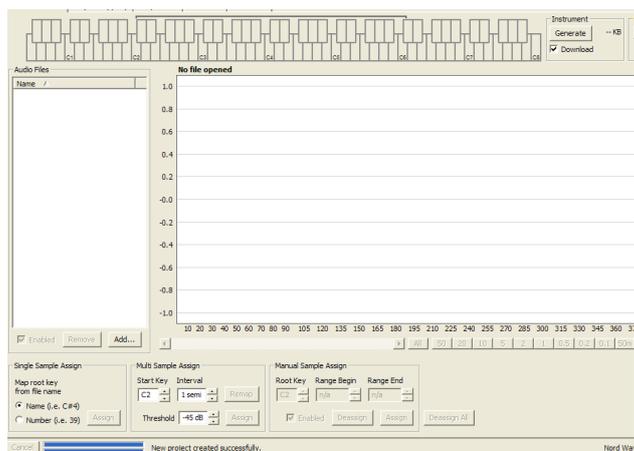
Audio Files

This section contains the list of audio files that are included in the current Project. The list will be empty when you create a new Project, if you open a previously saved Project there may be files in the list.

It is in this list that you select the referenced audio file you wish to use to create samples and assign these samples to Zones. When a file is selected, a graphical representation

of its waveform will appear in the waveform graph if the Enabled box is checked.

Only audio files or parts of the audio files that have been assigned as samples in the Project are included when a Sample Instrument is generated.

Name

The files in the list may be sorted alphabetically in an ascending or descending manner by selecting Name and changing direction by clicking on the arrow.

Add Button

Brings up the Add Files dialog where you choose audio files, to be added to your project. Multiple files can be selected.

⚠ *Note: A Project uses references to the audio files on the hard drive, and does not load any actual audio data. Any changes that you do to the original audio files will also affect the Project.*

Remove Button

To remove an audio file from the Project, click on the Remove button. This will also remove any samples from the Project that are associated with this audio file.

Enable box

To temporarily remove an audio file from the Project, uncheck the Enabled box. All samples from the audio file in the Project will be disabled. All the Zones that have these samples assigned to them will be removed. The neighboring zones will cover the ranges, which the disabled samples used to occupy. The settings of the disabled samples and zones will be retained, when the box is checked, the samples and zones will be restored.

Waveform graph

This is a visual representation of the audio file that is selected in the file list. This graph will appear in other tabs as well, with minor alterations in order to assist you in the editing process. If the audio file is in mono, a single graph is drawn, if the audio file is in stereo, two parallel graphs are drawn. You can select a part of or an entire audio file by a standard click-and-drag procedure with the mouse.
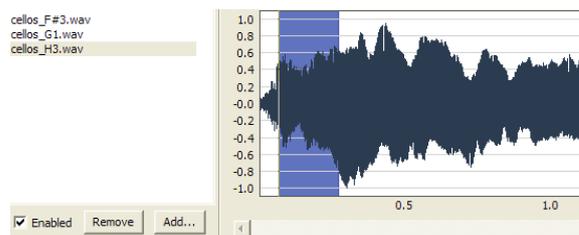
If the entire duration of the audio file will not fit in the waveform graph, you can scroll the content of the graph by using the scroll bar below the graph display.

Waveform Graph Colors

Colors are used to define areas and elements in the graph. The actual waveform data is drawn in black. An undefined area is illustrated by a gray background; a selected (but unassigned) area will have a dark blue background.

If you right-click on a selected area, you can assign this selection as a sample, with the Root Key setting from the Manual Sample Assign area.

When one or several parts of a audio file has been assigned as one or several samples, this will be indicated in the waveform with alternating light blue and gray colors, in the same fashion as the zones are indicated in the Keyboard Grid. If the sample is in focus, this will be illustrated with a yellow color.

Zoom buttons and slider

Zoom in on the waveform using the zoom buttons and the zoom slider.

The buttons below the graph labeled All, 50, 20 etc are the zoom buttons for the X-axis - the duration of the audio expressed in seconds. If you select All, the entire duration will fit in the graph, if you select e.g., 2, 2 seconds of the audio will fit in the graph. Clicking on the 50m, 20m or 10m buttons will show 50, 20, and 10 milliseconds sections of the audio file.

The zoom factor for the Y-axis - the amplitude - is done with the selectors and/or the slider at the lower, right corner. The level of 1.0 represents the full amplitude - 0 dBFS-relative to the bit depth of the audio file.

Single Sample Assign - SSA

This function allows you to easily map samples to a Zone, where the Root Key of the sample is based on a certain string of characters in the audio file's filename.
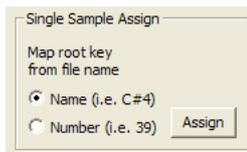
Name

This function use a naming convention where the pitch or note name is indicated in the actual file name. A file that has the name celloC#4.wav will be mapped with the Root Key on C sharp, in the middle octave - when the Octave Shift on the Nord Wave is set to 0. The SSA can interpret the Root Key, a sharp sign (#) and the octave.

Number

Uses a number in the file name and interprets this as a Root Key number. The middle C, C4 on the Nord Wave keyboard - when the Octave Shift on the Nord Wave is set to 0 - is key number 60.

Select one or several audio files in the Audio File list and click on Assign to assign the samples to Zones. You can use the Ctrl key (or right-click) to select nonconsecutive files in the list.

Multi Sample Assign - MuSA

This function can create several samples and assign these to zones from a single audio file with recordings of several individual notes, one after the other.
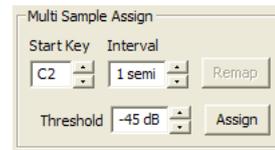
Start Note

Set this to the match the pitch of the first recorded note in the audio file.

Range: F0 - C8

Interval

Set this to match the intervals between the recorded notes in the audio file.

Range -48 - 48 semitones

Threshold

The threshold setting is used to distinguish or separate the individual notes from one and another in the audio file.

Range: -80 - 0 dB

Remap button

Select this to map the entire audio file again, using edited settings. This can be useful if you e.g. have entered a Threshold setting that was unsuitable for the audio file. Change any setting and you can remap the file.

Assign button

This activates the assignment of the selected audio file, using the settings you have entered for the parameters for the MuSA function.

Manual Sample Assign - MaSA

This function can create and assign a sample from a selection in the current audio file. Click and drag in the waveform graph to select a part of, or the entire current audio file.
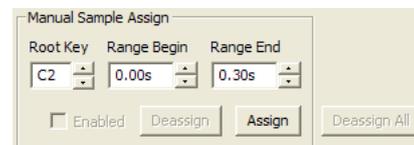
Root Key

This is the note where the sample will play back at its original pitch (or speed if the sample is non-pitched or a performance loop). If you make consecutive selections, the setting will increase in steps of one semi tone for each time you have assigned a sample.

You can also use this setting to adjust the Root Key of a mapped sample. Put the sample in focus and adjust the value to the next available key.

Range: F0 - C8

⚠ *Note: It is not possible to assign two samples to the same key.*

Range Begin

This will indicate where the selection you have made in the graph begins. Use the increment/decrement buttons to

adjust the beginning of the selection.

Range End

This will indicate where the selection you have made in the graph ends. Use the increment/decrement buttons to adjust the end of the selection.

Assign button

This activates the assignment of the selected audio file, using the settings you have entered for the parameters for the MaSA function.

Deassign

This deactivates the assignment of the sample that is in focus.

Enable box

This enables or disables the assignment of the sample in focus. It will default to the checked state when you click the Assign button. Un-check it to temporarily disable an assignment to the sample in focus. The sample and the settings will be kept in the Project, just check the box again to put it right back in business.

Deassign All

Clicking on this button will permanently de-assign the mapping of the focused sample, and also all the other samples that originates from the same audio file. Use this function with care, to quickly start with a clean slate with a previously mapped audio file.

Sample Loop/Stop Tab

In this tab there are functions that will assist you in finding a loop for the sample that is currently in focus, as indicated by the yellow color in the Keyboard Grid. As soon as an audio file or a selection from an audio file is assigned as a sample, a loop will be automatically created by the Nord Wave Manager.
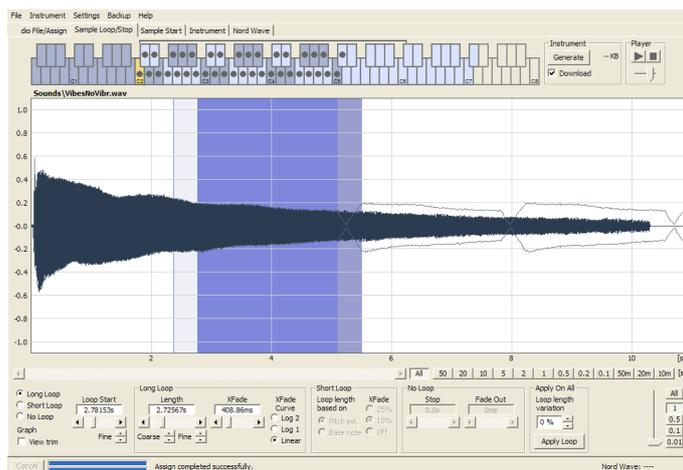
Looping a sample is very useful in order to be able to play the sample for a time period that is longer than the actual sample itself. It also helps conserving the available memory space, you can have more samples available.

A loop in a sample consists of two positional markers in the audio, the loop start and the loop end markers. Visualize the playback of a sample as a horizontal journey from the start of the waveform at the extreme left, towards the end at the right.

Somewhere along the line you will pass the loop start marker, making a mental note of its location. You continue to travel towards the end of the audio file but when you

reach the loop end marker, you immediately go back to the loop start marker and resume the path towards the end. And then you hit the loop end marker again, go back to the loop start, and so on.

To create a perfect, seamless loop can sometimes be a bit difficult. Sometimes the audio at the loop start is very different compared to the audio at the loop end marker, which will produce audible and perhaps unwanted artifacts in the sound.

In order to minimize certain loop artifacts, a crossfade function can be used. This uses audio that is before the loop start marker, and mixes this with audio that is before the loop end marker when the loop is playing back.

A crossfade has usually several parameters to set the length of the crossfade, and to adjust the taper of how these two sound bites will blend into each other during playback. This can help to smooth things out and create a better sounding loop.

⚠ *Any audio data after the loop end point will be automatically discarded by the Nord Wave Manager when you create the Sample Instrument from the Project.*

Waveform graph colors

The waveform graph presents the loop by showing certain areas in different colors. The position of the loop start marker is at the left edge of the blue area. The position of the loop end marker is at the right end of the darker blue area.
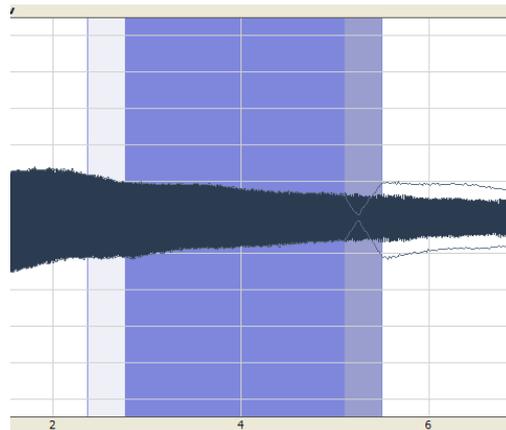
The crossfades first section is indicated with the light blue area that is before the loop start, to the left of the blue area. The crossfades end section is the darker area immediately to the left of the loop end marker. As these settings are changed by you, the indication in the graph will change as well.

You can set the position of the loop start marker by clicking anywhere in the graph. If you right-click to the right of the loop start marker, you can set a new loop end marker – and change the actual loop length.

The graph in the Sample Loop/Stop tab can be augmented with a more detailed display of the waveform at the loop start and the loop end markers. This is activated by checking the View Trim box at the lower, left corner of the Manager window.
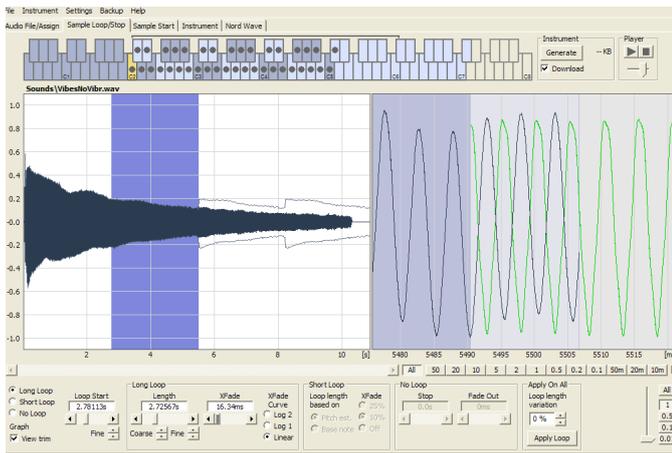
The black waveform shows the audio immediately before and at the loop end marker. The green waveform is the audio at, and immediately after the loop start marker. If these two waveforms meet at the same level, chances are good that his will indicate a loop without any clicks in it.

If a crossfade is used, the two waveforms will be superimposed on top of each other, like the illustration above. This gives a nice visual confirmation of what happens if you fine-tune the length.

- *Start with the crossfade set to a small value and see how these two waveforms are presented. When the two colored peaks and valleys are in phase with each other, chances are good that you have a pretty good loop. Any changes you do can always be monitored in real time if you activate the playback.*

Loop Options

There are three available loop options: Long Loop which is the default loop that is applied to a sample when it is assigned to a zone, Short Loop which creates a loop with a single waveform period and finally the No Loop, which gives you an opportunity to set an end marker to the sample.

Loop Start

You can enter a loop start position expressed in seconds in the value box, confirming this by pressing enter, using the slider or fine-tune the position with the increment/decrement buttons. Clicking in the graph will also position the loop start marker.

Long Loop

This section contains the settings for the Long Loop parameters.
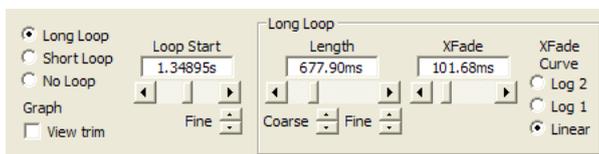
Length

You can enter a loop length expressed in seconds in the value box, confirming this by pressing enter, using the slider or set the length with the increment/decrement buttons, in a coarser or in a fine-tune fashion.

Right-clicking in the graph will position the loop end marker, which together with the position of the start marker sets the loop length. Make sure that you right-click to the right of the loop start, it is not possible to position the loop end before the loop start marker.

Xfade

You can enter a crossfade length expressed in seconds in the value box, confirming this by pressing enter or by using the slider. Any changes you do will be immediately heard if you are playing back the sample and also presented in the waveform graph. To disable the crossfade, set the crossfade length to 0.

Xfade Curve

There are three available curves for the crossfade: Log1, Log2, and Linear. These are used to compensate for any amplitude changes that might occur in a crossfade as a result of cancellations when harmonics are out of phase with each other.

Short Loop

When using Short Loop, the loop length is set to a single waveform period. As the length of a single period is relative to the pitch of the sample, you can use an algorithm that analyzes the pitch of the sample, or use a length correlating to the pitch of the sample's Root Key.

Loop Length based on

These are the two alternatives on how to determine what constitutes as a single period in the sample. If a short loop produces a different pitch than the actual sample, you may need to try the Root Key option.

The Pitch Estimate is the default, but there may be occasions when this is unsuitable. If a sample has strong harmonics (that are stronger than the fundamental), the Root Key option may be better suited.

Xfade

The short loop also has provisions for using a crossfade, with a selection of fixed lengths: 25% or 10% of the loop length, or Off.

No Loop

This provides you with the option to set a marker where the sample will end. You can also set a fade out time.

Stop

You can enter the position of where the sample will end expressed in seconds in the value box, confirming this by pressing enter or by using the slider. You can also click in the graph to set the sample end marker when this loop option is selected.

Fade Out

Enter the Fade Out time expressed in seconds in the value box, confirming this by pressing enter or by using the slider. This is the time in seconds leading up to the sample end during which the amplitude will gradually fade out.

Apply on All

The loop settings that you have made can be applied to all other samples in the project. In order to compensate for

any artifacts that might occur when you e.g. play a chord, as a result of several loops with identical settings, you have the option to apply a variation to the loop length.
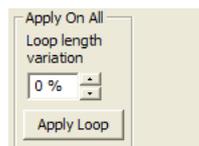
Loop Length Variation

Set the variation to the loop length to all the individual samples loops, expressed as a percentage. Enter the value in the box, confirm this by pressing enter or use the slider.

Apply Loop

Click this button to activate the variation setting to all the loops.

Sample Start Tab

When the Sample Start tab is opened, the waveform graph will zoom in to give you a better view of what is happening at the very beginning of the sample. As soon as a sample is assigned by the Nord Wave Manager, a Start point will be automatically set. This will be indicated in the Start tab by the green marker.
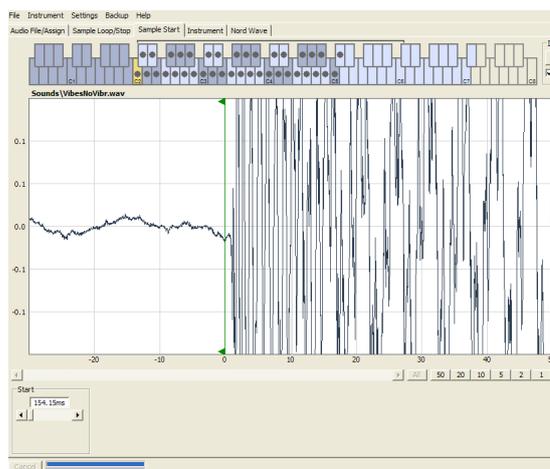
Start

Enter the start position in the sample expressed in seconds in the value box, confirming this by pressing enter or by using the slider.

You can also set a start point by clicking in the waveform.

Use the zoom controls if you need to back out of the view, or get closer to the actual waveform representation.

Instrument Tab

This is where you can change individual settings to all the samples that are mapped in the current Project. You can adjust the amplitude with the gain controls, tune the samples and apply a couple of powerful functions that will assist you with the final mapping of the samples. The familiar Keyboard Grid is here to assist you with a clear overview of how the samples are mapped across the keyboard range.
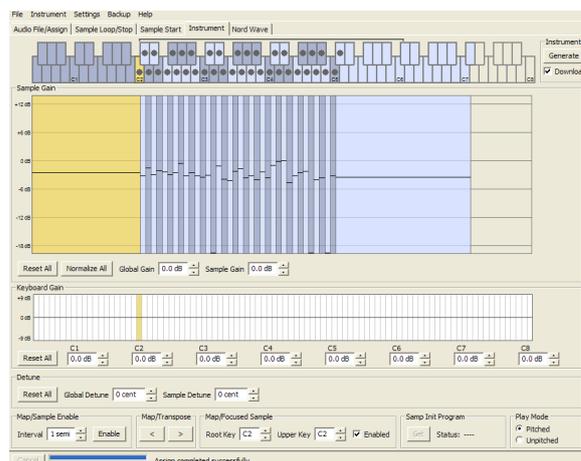
Sample Gain grid

All the individual samples will be presented here, as zones or slices that correspond to the map settings that are presented in the Keyboard Grid. The sample in focus will be indicated in yellow, the other samples in a alternating pattern of blue and gray to provide you with an easy-to-use overview.

The amplitude of any individual sample is indicated with the black horizontal marker in each slice. With the controls below this grid, you can adjust the global gain of the entire Sample Instrument or an individual gain for every sample. This can be used to increase or attenuate the overall loudness of the Sample Instrument.

The zones can be changed by clicking and dragging on the zone boundaries in the grid, grab the upper limit of a zone and move it to a new key. Any changes that you make to the mapping with the settings at the lower part of this window will also be instantly shown here.

⚠️ *Note: One zone's Upper Key cannot be pushed on top of or above another zone's Root Key.*

Reset All

Click on this to reset all the samples to their original amplitude, as they were when they were added to the Project.

Normalize All

This allows you to set all the samples to the 0 dB amplitude in the grid. This represents the maximum amplitude in the audio file, in relation to the bit depth of the audio. There is however headroom available in the Nord Wave Manager and the Nord Wave, that allows you to increase the amplitude beyond this level if you need.
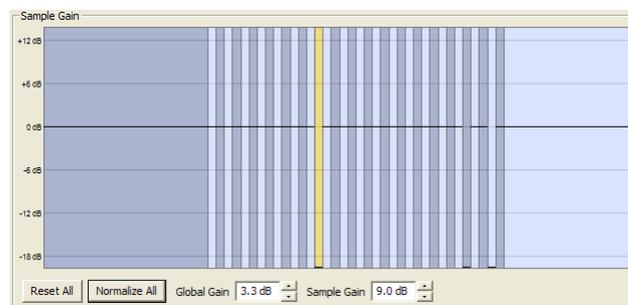
⚠️ *Note: The 0 dB amplitude as indicated in this graph equals the amplitude that the analog style waveforms have in the Nord Wave.*

Global Gain

This can set a global increase or attenuation of the amplitude of the entire Sample Instrument. Any individual amplitude differences between the samples will not be

altered. Set the value expressed in dB:s in the value box, confirming this by pressing enter, or with the increment/decrement buttons.

Range: -8.9 to + 8.9 dB

Sample Gain

This allows you to change the amplitude on each individual sample. The amplitude after a gain change will be indicated with the horizontal line in the Grid. Set the value expressed in dB:s in the value box, confirming this by pressing enter, or with the increment/decrement buttons.

Range: -8.9 to + 8.9 dB

Keyboard Gain graph

This will indicate any changes that you make with the Keyboard Gain controls. These settings will affect the entire Sample Instrument, and can be used to apply various adjustments that will change the amplitude across the range of the keyboard. If for example the lower range in the Sample Instrument is too loud, you can apply an attenuation that begins at a chosen octave. The sample in focus will be indicated as a yellow slice.
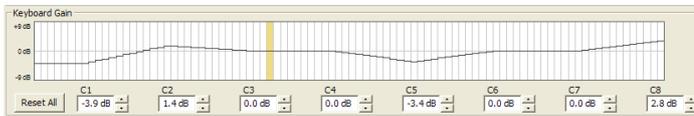
Reset All

This will reset any settings that you have made using the octave gain controls.

Octave gain controls

Allows you to apply a gain change to a range, which will start at the preset keys.

C1, C2, C3 etc. C4 represents the middle C on the Nord Wave, when the Octave Shift control is set to 0. Set the value expressed in dB:s in the value box, confirming this by pressing enter, or with the increment/decrement buttons.

Ranges: -8.9 to + 8.9 dB

Detune

You can change the overall tuning of the samples, either on a global scale or for any individual samples. This provides you with the means to fix any problems with samples that are out of tune, or to adjust an entire Sample Instrument. The unit is in cents, 100 cent is the range between two semitones.
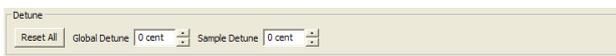
Reset All

This will reset any changes that you have made using the Detune controls.

Global Detune

Sets the overall tuning of the Sample Instrument. Enter the value expressed in cents in the value box, confirming this by pressing enter, or with the increment/decrement buttons.

Range: -50 to 50 cents

Sample Detune

This allows you to detune the sample in focus in the Sample Instrument. Set the value expressed in cents in the value box, confirming this by pressing enter, or with the increment/decrement buttons. Each and every sample in

the Project can be detuned.

Range: -50 to 50 cents

Map/Sample Enable

This function can be used to quickly enable and disable samples at certain intervals in order to reduce the amount of memory used by the Sample Instrument. This is a great way to quickly experiment with the Sample Instrument without having to delete and/or re-assign samples.
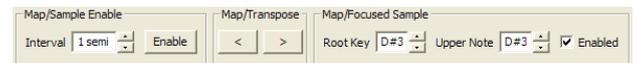
Interval

Set the interval or range between the samples that will be kept enabled. The end result will depend on how the original ranges are mapped. Samples will not be moved from one key to another, any gaps across the keyboard range will be filled by any adjacent samples. A setting of 0 will disable all the samples.

Range: 0 to 48 semi tones

Enable

Enables or disables samples according to the Interval setting.

Map/Transpose

Use the buttons to transpose the entire Sample Instrument in semi tone steps.

Map/Focused Sample

With these controls it is very easy to change the focused sample's Root Key and Upper Key, in order to edit the assignment of the sample. The focused sample will be highlighted in yellow, and you can quickly select focus by clicking on the keys in the Keyboard grid or by scrolling through the samples using the horizontal arrow keys on the computer keyboard.

Root Key

Sets a new Root Key for the focused sample. There can only be one sample assigned to each Root Key, the value will automatically skip to the next available note.

Range: F0 to C8

Upper Key

Sets a new Upper Key for the focused sample. The available range may be limited by samples that occupy a Root Key higher up on the keyboard. The Upper Key can not be a key that is located lower than the Root Key on the keyboard.

Range: F0 to C8

Enabled

This allows you to disable and re-enable the focused sample.

Samp Init Program

Every Sample Instrument can have a complete set of the Nord Wave synth parameters assigned to it. These parameters will be recalled if you perform the Samp Init function on the Nord Wave.
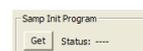
This can be very useful if you for example want to share a Sample Instrument with another Wave user, and wish to also share your preferred Program setting for this particular

Sample Instrument.

The typical workflow is to first create and edit all the samples in the Project to your liking, then generate a Sample Instrument and download this to a Nord Wave. Then you would use that Sample Instrument and create a great Program using all the functions in the Wave, and save this as a Program.

Go back to the same original Project, and upload the parameters from the Wave to the Project, save the Project and finally generate and download the now more complete Sample Instrument again to the Nord Wave.

Get
Press this button to get the program settings of the currently active program from a connected Nord Wa

Status
Will indicate the current status of the function.

Play Mode
This allows you to choose if a sample should be pitched according to the standard 12 tone interval when you play the keys it has been assigned to, or to play back at its original pitch, regardless of what key you play.
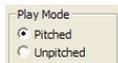
If you e.g. have some drum samples that span several keys, they could be set to Unpitched if you want them to play at the same, original pitch.

Nord Wave tab

This is where you find the librarian functions of the Nord Wave Manager. You can work with the Sample Instrument memory, and the Program memory. These are labeled instruments and Programs in the dropdown menu. If no Nord Wave is connected to the computer, the pages and memory locations will be grayed out.

⚠ ***The actions that take place in the Nord Wave Tab will affect the memories in the actual synthesizer. The Nord Wave Manager is online with the synth at all times, so any changes that you perform in the Manager will immediately be echoed in the synth. If you e.g. delete a Sample Instrument from the list in the Nord Wave Manager, that same SI will also be deleted from the Nord Wave Flash memory, without any warnings or confirmation dialogs.***

Instruments - Programs
Select the memory area that you wish to work with. Instruments is the Sample Instrument area, the Flash memory. The Programs option is quite unsurprisingly the Program memory area.

Instruments list
There are 99 possible locations for Sample Instruments in the Nord Wave Flash memory. The Flash capacity is 180 MB, and this is of course allocated dynamically. You can have one Sample Instrument, that contains one sample that is using up all the memory capacity, or you can have 99 Sample Instruments with 99 samples each, as long as the combined sizes of these are kept within the 180 MB limit.

When you generate a Sample Instrument from a Project in the Nord Wave Manager, and download this to the Wave, this Sample Instrument will be saved at the first available location in the Flash memory.

If the locations are occupied one after the other in a con-

secutive manner, it will then appear at the end of the list in the Nord Wave tab. If there is an empty location in the middle of the list, it will be saved to this location.
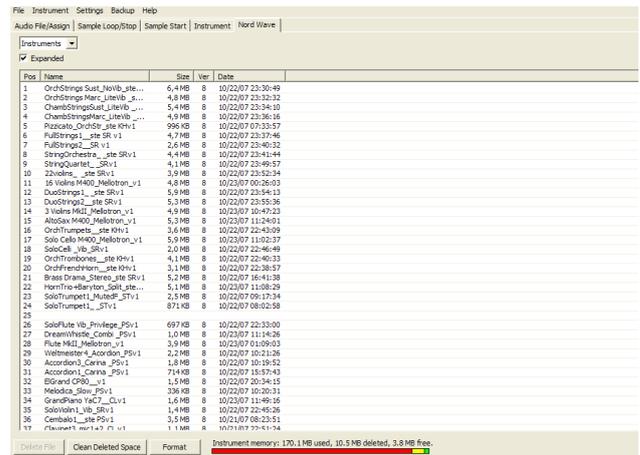
The Sample Instrument list may be ordered by position, alphanumerically by name, according to sizes, versions or date of last edit by clicking on the appropriate heading.

Right-click
If you right-click on a Sample Instrument in the list, you will get the following options:

Delete – This will delete the Sample Instrument from the Nord Wave Flash memory. Any Program in the Nord Wave that used that particular Sample Instrument will probably sound very different, since it will be missing an important component.

The space that the deleted SI occupied is not immediately available to other SI:s, even though it is gone from the list and its location is free. The Flash memory needs to be cleaned to get rid of any deleted samples in order to free up the space.

Upload to backup folder – This will upload the Sample Instrument to the computer hard drive. It will be saved as a .nwi file, in a folder structure in the same folder where the Nord Wave Manager is located.

Just as any other computer file on your hard drive, this .nwi may be renamed, emailed, copied, moved, lost or even stored in a safe location if an evil computer crash suddenly decides to take your hard drive for ride.

⚠ *Note: If you want to rearrange the order of the Sample Instruments, there are a few things to consider. A Program in the Nord Wave that uses a Sample Instrument does not know what the sound of the SI is. The Program is only referring to a Sample Instrument location number. If you have Programs that uses Sample Instruments, and then you rearrange the order of these in the Nord Wave Manager, the Programs may sound quite different.*

Expanded
When this option is checked, the list will show all the available 99 locations in the Flash memory. This will for instance make it easier to drag an .nwi file to a specific location in the middle of the list. If this is unchecked, only the occupied locations will be shown.
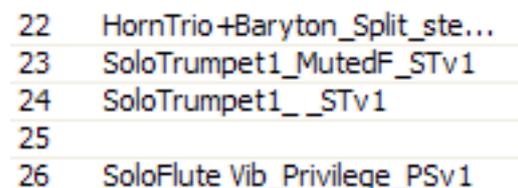
Position

The Sample Instruments in the list are numbered; these numbers correspond to what you select with the rotary encoder in the Osc 2 section in the Nord Wave.

Name

The Sample Instrument gets its name from the name of the Project that gave birth to it. If a Project has not been saved – being nameless that is - and you generate a Sample Instrument, it will get the default name: Untitled. The name of the Sample Instrument will be shown in the Nord Wave display, when it is selected. If a Sample Instrument is uploaded to the computer hard drive, the resulting .nwi file name will be same as the SI name. Change the file name, and the SI name is also changed when that file is downloaded to the Nord Wave.

⚠️ *Note: Two Sample Instruments in the Nord Wave cannot have the same name, so if you happen to generate two Sample Instruments without having saved the Projects, then the second Sample Instrument called Untitled will overwrite the first one that had that same name. If you try to drag an .nwi file from the hard drive to the list and it has the same name as a SI in the list, that operation will not be allowed and you'll get a notice about this in the message area on the footer in the Manager window.*

File Types and Names

Files associated with the Nord Wave and the Nord Wave Manager use the following extensions:

.nwiproj – Nord Wave Project file

This is a file containing the Project settings. Audio files are not included in this file - any changes to the original audio files will affect you project. This file type will be created when you save a Project.

These files will be needed if you want to change any settings in a particular Sample Instrument at a later stage, so save often and keep copies in a safe location.

.nwi - Nord Wave Instrument file

This is a file containing the cropped and encoded audio and the Project settings for one Sample Instrument.

This file type will be created and saved to the hard drive when you generate a Sample Instrument from the Instrument menu (or with the Generate button in the Manger window).

You can also create .nwi files when you upload Sample Instruments from the Nord Wave, in the Nord Wave tab in the Manager.

Use this file type to share Sampled Instruments with other Nord Wave users. The .nwi file can not be opened or edited; it can only be down- or uploaded to and from a Nord Wave.

To edit any content or setting in a Sample Instrument you must go back to the original Nord Wave Project file (.nwiproj), do the edits there and then re-generate the Sample Instrument. An .nwi file may or may not contain the Program settings that you wish to include with the SI.

In order for these settings to be included, you need to get the settings from the Wave from within the Manager application. Read more on this at page 47.

A Sample Instrument gets its name from the Project name. If you look at the Nord Wave LCD when you scroll through the SI:s with the OSC2 LED-dial, you will see that name, but also other groups of characters in the second row.

This is a naming convention that you can use if you rename the file name on the computer hard drive and then download the SI.s again to the Nord Wave. The file name can include three character groups and these will be entered in the following order: name_description_revision.nwi

The groups are separated by the underscore character.

The name will appear in the first LCD row (maximum of 16 characters), the description and revision in the second row (also a maximum of 16 characters in total).

.nwp - Nord Wave Program file

This is a file containing the Program settings from one program in the Nord Wave. It does not contain any Sample Instruments.

When you share a custom Program using a custom Sample Instrument, you need to share both the .nwp and an .nwi file. If you upload a Program file to the computer hard drive, you may rename the computer file.

This will then give the Program a new name if it is downloaded to the Wave, as it appears in the LCD (and the Nord Wave tab in the Manager).

Size

Indicates the size of the Sample Instrument. This may be useful if you are short on memory and wants to know if a particular SI occupies a certain amount of space in the Flash memory.

Ver

To be documented.

Date

Indicates the date and time when the Sample Instrument was saved after its latest edit.

Footer

The Nord Wave tab has some file management functions in the footer area.
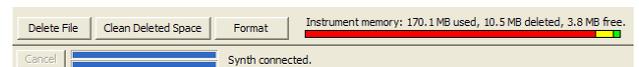
Delete file

If a Sample Instrument is selected in the list and you click on delete, it will be erased from the Flash memory without any confirmation request. The space that the deleted SI occupied is not immediately available to other SI:s, even though it is gone from the list and its location is free. The Flash memory needs to be cleaned to get rid of any deleted samples in order to free up the space.

Clean Deleted Space

This function will clean up the space where any deleted SI:s where. If nothing has been deleted, this button will be blanked out. Deleted space that hasn't been cleaned yet will be indicated with yellow color in the Memory Indicator.

Format

This is a radical function; it will format the entire Flash memory and prepare it for some brand new content. You will be asked to confirm your intentions.

Memory Indicator

This will give you a numerical and a visual indication of how the Flash memory space is being used. Red indicates the spaced used by the samples, yellow is space from deleted samples, but not yet available since it hasn't been cleaned and green is the space that free to use for new Sample Instruments.

Program lists

When Programs is selected in the Nord Wave tab dropdown, the window will be divided in two identical lists. There are two lists, simply to make it easy to move programs from one location to another.

You can make the lists show separate banks. Rearranging programs is simply a matter of drag and drop. Drag a program from one bank/list to another bank/list in either direction.
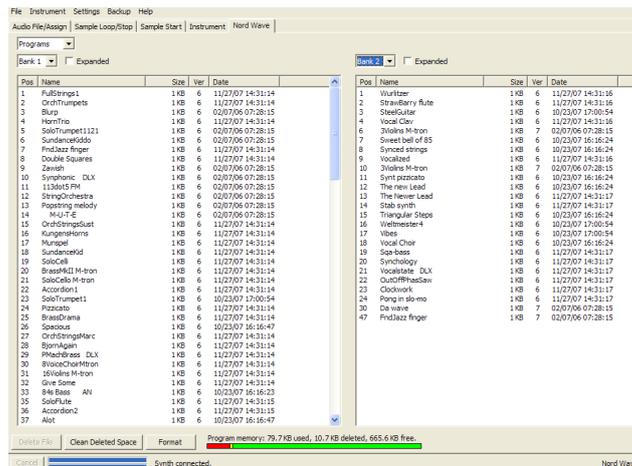
Dragging will always move the source Program, it is not copied. The source location will be changed, depending on the destination. If you drop one Program on another Program, the two will trade locations. If you drop one Program to an empty location, the source location will be empty and the destination will be occupied by the former source.

Right-click

If you right-click on a Program in the list, you will get the following two options:

Delete – This will delete the Program from the Nord Wave Program memory. The space that the deleted Program occupied is not immediately available to other Programs, even though it is gone from the list and its location is free. The Program memory needs to be cleaned to get rid of any deleted Programs in order to free up the space.

Upload to backup folder – This will upload the Program to the computer hard drive. It will be saved as a .nwp file, in a folder structure in the same folder where the Nord Wave Manager is located. Just as any other computer file on your hard drive, this .nwp may be renamed, emailed, copied, moved, lost or even stored in a safe location.

Expanded

When this option is checked, the list will show all the available locations in the Program memory. This will for instance make it easier to drag an .nwp file to a specific location in the middle of the list. If this is unchecked, only the occupied locations will be shown.

Position

The program memory is divided in 8 Banks, with 128 Programs in each bank.

Name

A Program get its name when you save it on the Nord Wave..

The name will be shown in the Nord Wave LCD, when it is selected. If a Program is uploaded to the computer hard drive, the resulting .nwp file name will be the same as the Program name. Change the file name, and the Program name is also changed when that file is downloaded to the Nord Wave.

Size

Indicates the size of the Program.

Ver

To be documented.

Date

Indicates the date and time when the Program was saved after its latest edit.

Footer

The instrument list window also has some file management functions in its footer area.
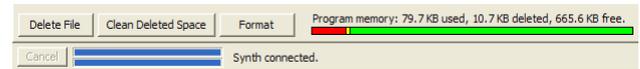
Delete file

If a Program is selected in the list and you click on delete, it will be erased from the Program memory without any confirmation request. The space that the deleted Program occupied is not immediately available to other Programs, even though it is gone from the list and its location is free. The Program memory needs to be cleaned to get rid of any deleted programs in order to free up the space.

Clean Deleted Space

This function will clean up the space where any deleted Programs where. If nothing has been deleted, this button will be grayed out. Deleted space that hasn't been cleaned yet will be indicated with yellow color in the Memory Indicator.

Format

This is a radical function; it will format the entire Program memory and prepare it for some brand new content. You will be asked to confirm this action.

Memory Indicator

This will give you a numerical and a visual indication of how the Program memory space is being used. Red indicates the spaced used by the Programs, yellow is the space from deleted programs, but not yet available since it hasn't been cleaned and green is the space that free to use for new Programs.

12. Appendix

Description of Program categories

ACOUSTIC	Sounds with an acoustic character like accordion, ethnic sounds, mallets etc. Doesn't necessarily have to be emulations of existing instruments.
BASS	All sorts of bass sounds.
DRUM	Drum and percussion sounds.
FANTASY	Melodic effects sounds and textures, often with rhythmic modulations.
FX	Atonal effects sounds like water, laser guns, explosions etc. Sometimes with heavy modulations.
LEAD	Sounds meant for the soaring lead lines. Monophonic sounds and also lead "chord memory" sounds.
ORGAN	Different types of organ sounds.
PAD	Melodic polyphonic "chord" sounds with fairy slow attacks.
PIANO	Piano type sounds like Rhodes and Wurlitzer emulations and also sampled and FM based pianos.
PLUCK	Sounds with a fast attack like guitar, synths - anything that reacts really quick when you hit a key.
STRINGS	Strings and string section sounds.
SYNTH	All sorts of melodic polyphonic synth sounds .
VOCAL	Sample Instruments or synthesized sounds with a distinct vocal character.
WIND	Wood wind and brass instruments.
USER1	The User categories are meant for your own categorization purposes.
USER2	
USER3	

Mellotron Sound Library

Some of the Sample Instruments in the Nord Wave Flash memory comes from the legendary Mellotron, a classic keyboard instrument that changed the music history. We are very proud to be able to incorporate the first part of the Mellotron Soundbank for the Nord Wave.

Please visit our website at www.clavia.se for further news on the release of additional sound banks for the Nord Wave.

What about those sounds?
The original sounds from the various Mellotron models could be called the very first sample library, before anyone even knew what these words were going to mean. These sounds have a very distinct and wonderful quality to them - earthy, organic and different are words that come to mind.

The sounds in the Nord Wave library originates from the master tapes that Clavia has licensed. These tapes were then used to create original soundbanks for a brand new Mellotron, manufactured with modern tape heads, capstans, electronics etc. And from this brand new, exquisite instrument, the sounds were recorded using state of the art technology.

After many hours of editing and looping with the Nord Wave Manager, the samples finally made it to a Nord Wave, and then to this CD.

The idea of using the vintage master tapes instead of sampling a vintage instrument is to faithfully recreate the original sounds the way they used to be, and is a natural step in Clavia's long striving effort to make the sounds of classic keyboard instruments available to keyboard players once again.

Condensed Mellotron Story

Tape replay keyboard instruments were invented in the late 1950's by Harry Chamberlin. In the early 1960's one of his employees took a Chamberlin Musicmaster 600 (a dual-manual machine with 36 sounds) to the UK. This became the blueprint of the Mellotron MkI. It had the same basic layout as the Chamberlin 600 with 2 manuals, the left one having rhythm tracks to be played as a background, and the right one having lead sounds like strings, flute and lots of organ sounds.

It was basically intended to be a home organ, like a home entertainment center where someone without music skills could sound like an orchestra. Unfortunately it was very hard to play rhythms like that, even for trained musicians, and together with some technical flaws and bad engineering it wasn't too much of a success - many of the first series of instruments had to be taken back to the factory and upgraded from MkI to MkII. Luckily young and creative professional musicians had become interested in the Mellotron, and the MkII became extremely popular amongst pop/rock groups in the late 1960's: Manfred Mann, Beatles, Rolling Stones, Moody Blues, King Crimson and others.

The Mellotron company later created the M400, a smaller instrument very similar to the one used in this presentation. This instrument was used on the road and in the studio during the 1970's by Led Zeppelin, Pink Floyd, Genesis, Yes, Deep Purple, Aerosmith, Wings, David Bowie, Kraftwerk and others. During later years it has been used by Oasis, Primal Scream, Radiohead, Smashing Pumpkins, Red Hot Chili Peppers, U2, Nelly Furtado, Air, REM, Manic Street Preachers etc. Through the extremely successful music of these groups and artists the Mellotron sound has been widely spread, and even though most people don't know that it's a Mellotron, they've heard it's sound.

History of the Mellotron sounds

The MkI instrument had two 35 key manuals, the left one having 6 banks of rhythms and fills and the right one lead sounds. The tapes were 3/8" 3-track just like the Chamberlin 600. The recordings for the Mellotron MkI were made during 1962 and 1963 and were supervised by big band leader Eric Robinson, who also had substantial involvement in the Mellotron company. They consisted of 18 rhythms and fills sounds and 18 leads sounds. There were also some more rhythms and fills recorded that were not used for the MkI.

When the MkI was upgraded into the MkII the decision was made to re-record many of the sounds. The only lead sounds that were kept were the Flute, the Vibraphone and the French Accordion. Also the 3 Violins sound from the Chamberlin 600 was used in a slightly eq'd form, and ironically this became by far the most widely used Mellotron sound. Among the rhythms the Afro Cuban was replaced by the Cuban, the Slow Fox Trot and the Samba was re-recorded, the rhythms 6/8 tempo in F and Twist in C were added and numerous of the fills were changes.

During 1966 the decision was made to create an entirely new single-manual instrument that was named the M300. It had a 52 key A-C keyboard making another re-recording of all sounds necessary. The left 17 keys mostly had rhythms and fills and the remaining 35 lead sounds. The machine had 2-track 1/4" tape and 6 banks.

These recordings were made during 1966 and 1967. The only sounds that covered the whole keyboard were the strings, the piano and the organ sound. The M300 was produced between 1968 and 1970 and towards the end, some of the sounds were replaced. The string sound was changed and the Bossa Nova, the Medium Foxtrot and the low part of the strings were replaced with Pop1 and Pop2 rhythms and a 6/8 tempo rhythm. The leader of these recordings was also in this case Eric Robinson.

In 1970 the M400 Mellotron was created. It had a single manual 35 key G-F keyboard, meaning that the MkI and MkII sound libraries could be used. The machine used 3-track 3/8 tape and had interchangeable tape frames. That meant that the sound library could be expanded according to taste. This instrument was also the first Mellotron specifically made for professional musicians.

The new sounds for the M400 library were recorded during the 70's, but of course some MkII sounds were still used, most notably the 3 Violins, the Flute and the MkII Brass. The most well known sound introduced with the M400 was the 8 Voice Choir, even giving the Mellotron company a sales boost.

Use of the Mellotron Sounds

Although the Mellotron had been used earlier by some British bands, the song Strawberry Fields Forever by the Beatles (Flute) and Nights in White Satin by the Moody Blues (3 Violins) in 1967 became the first Mellotron 'hits' both in Europe, the US and the rest of the World, forever making a mark in popular culture. The Rolling Stones used the 3 violins it in the song 10 000 Lightyears from Home, David Bowie in Space Oddity and numerous Britsh pop and 'Progressive' rock bands started using the Mellotron.

Among those were King Crimson (3 Violins, MkII Brass and Cello) Yes (3 Violins, 8 Voice Choir, Vibraphone, Flute etc) and Genesis (3 Violins, MkII Brass, 8 Voice Choir etc). It was also widely used in German 'Electronic' music such as Kraftwerk's Trans Europe Express (3Violins) and Tangerine Dream, who used not only the standard Mellotron sounds, but also Oboe, Bassoon, Saxophone and different string sounds.

Led Zeppelin also used it live on Stairway to Heaven, in Kashmir and The Rain Song. Even ABBA used it on Another Town, Another Train.

During the 80's the Mellotron remained virtually unused. Most notable exceptions are Talk Talk in Life's what You Make it and OMD's Enola Gay and other songs by these bands.

The Mellotron experienced a renaissance during the 1990's when numerous bands and artists like Red Hot Chili Peppers, Lenny Kravitz, Oasis, Radiohead, Air, Monster Magnet, REM and Manic Street Preachers. After 2000 the Mellotron is gaining even more popularity and has been used on hits by Dido, Nelly Furtado, Daniel Powter, Robyn, The Black Eyed Peas and The Strokes to name a few.

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Soundlist with comments

Mk I Lead sounds   Comments

15 original sounds,18 total:

MkI Clarinet

MkI French Horn

MkI Marimba

MkI Trombone   Very different from MkII

MkI Hammond Organ

(MkI French Accordion   Same as MkII)

(MkI Flute   Same as MkII)

MkI Acoustic Nylon Guitar

MkI Piano   Very different from MkII

MkI Tenor Sax   Very different from MkII

MkI Harpsichord/Trumpet+trombone split

MkI Reverb Organ

MkI Mandolin   Mandola-like

MkI Organ

(MkI Vibraphone   Same as MkII)

MkI Trumpet

MkI Tibia Organ

MkI Church Organ

MkII Lead sounds

18 sounds:

MkII Flute   Beatles, Stones, Led Zeppelin, Pink Floyd, ABBA, Chili Peppers, etc

MkII 3 Violins   Led Zeppelin, Moody Blues, Stones, etc, etc

MkII Acoustic Steel Guitar

MkII Trombone   Beatles

MkII Organ 1

MkII French Accordion

MkII Rock Guitar

MkII Brass   Genesis, King Crimson, Moody Blues, Stones, Beatles

MkII Piano

MkII Muted Brass Moody Blues

MkII Harpsichord

MkII Accordion   Genesis

MkII Organ 2

MkII Tenor Sax

MkII Vibraphone   Gracious

MkII Mandolin   Beatles

MkII Tibia Organ

MkII Church Organ

M300 Lead sounds

7 sounds:

M300 Strings   David Bowie

M300 2 Violins   Barclay James Harvest

M300 Solo Violin

M300 Slow Vibraphone

M300 Bass Flute

M300 Clarinet

M300 Celeste

M400 Lead sounds

25 sounds:

M400 Solo Cello   Oasis, King Crimson, Chili Peppers etc.

M400 Solo Viola

M400 16 Violins   Air

M400 String Section I

M400 String Section ll

M400 8Voice Choir   Radiohead, Genesis, Chili Peppers, Tangerine Dream etc.

M400 4Voice Female Choir

M400 4Voice Male Choir

M400 Mixed Custom Choir

M400 Male Solo Voice

M400 Boys Choir

M400 Pipe Organ

M400 Oboe   Tangerine Dream

M400 English Horn

M400 Bassoon   Tangerine Dream

M400 Alto Sax   Tangerine Dream

M400 Clavichord

M400 2Brass

M400 2Saxes

M400 Recorder

M400 Wine Glasses

M400 Vibes w/o Vibrato

M400 Tubular Bells

M400 Celeste

M400 Hammond C3

A total of 65 different sounds.