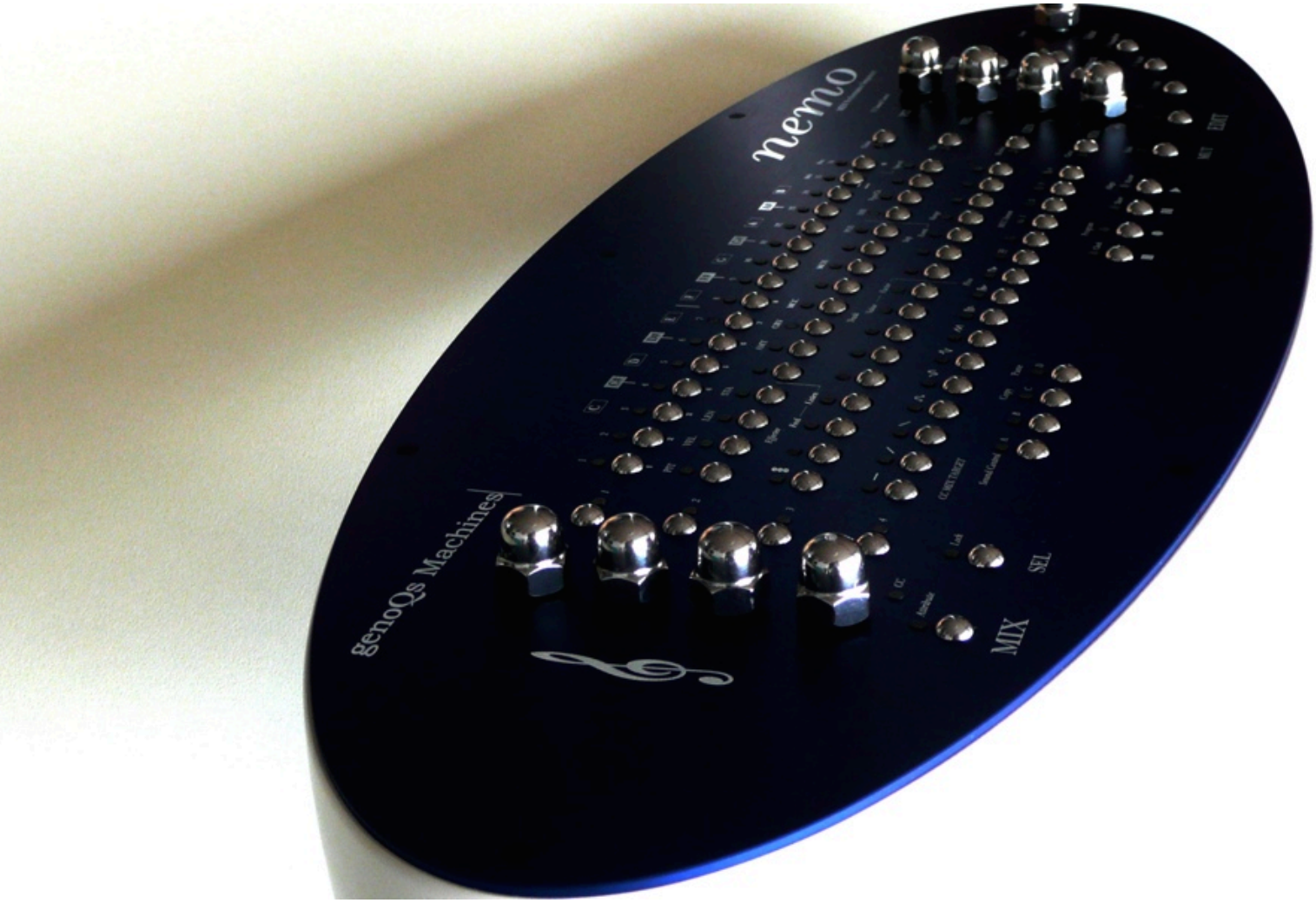

Nemo Navigation Guide

VI.44

Important Notice

LIMITED SOFTWARE WARRANTY POLICY

All the software provided with, or purchased especially for, genoQs Machines products has been tested for functionality. genoQs Machines will make its best efforts to correct reported software defects for future releases subject to technical feasibility. genoQs Machines makes no warranty or representation either expressed or implied with respect to the system's performance or fitness for a particular purpose. In no event will genoQs Machines be liable for direct or indirect damages arising from any defect in the software or its documentation. Furthermore, genoQs Machines will not accept any liability for any programs, sounds, audio recording or sequences stored in or used with genoQs Machines products, including the cost of recovery of such data. The warranties, remedies and disclaimers above are exclusive and take precedence over all others, oral or written, express or implied, to the extent permitted by law in the geographical area of the product's use. No employee of genoQs Machines, agent, distributor or employee of an agent or distributor is authorized to offer any variation from this policy.

WARNING!!

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

WARNING: WHEN USING ELECTRIC PRODUCTS, BASIC PRECAUTIONS SHOULD ALWAYS BE FOLLOWED, INCLUDING THE FOLLOWING:

WARNING

Pleas always use original power supply in dry location only. Nemo is designed to be used in a standard household environment. Power requirements for electrical equipment vary from area to area. Please ensure that your Nemo meets the power requirements in your area. If in doubt, consult a qualified electrician or genoQs Machines.

120 VAC @ 60 Hz for USA and Canada
220~240 VAC @ 50 Hz for Europe
240 VAC @ 50 Hz for Australia

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Install in accordance with the manufacture's instructions.
8. Do not install near any heat sources such as radiators, heat register, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

PORTABLE CART WARNING

S3125A

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Do not expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.

WARNING
THIS APPARATUS MUST BE EARTHED
IMPORTANT

FCC WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

AVIS POUR LES ACHETEURS CANADIENS DU NEMO

Le présent appareil numérique n'ément pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

VENTILATION

Do not prevent the unit's ventilation, especially by placing the unit on soft carpet, in a narrow space, or by placing objects on the unit's chassis—top, side, or rear panels. Always keep the unit's chassis at least 10 centimeters from any other objects.

CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE MANUFACTURER FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

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Introduction

Welcome, and sincere congratulations on the purchase of your new sequencer, the genoQs Machines Nemo!

We proudly put in your hands a device built to drive your creativity and provide you joy for years to come. Nemo is conceived as a living instrument with long-lasting value, to help you search and discover new sonic territory, rewarding you with an unequalled haptics experience.

We invite you to explore the capabilities of Nemo as you like and provide this manual as a start-up guide. Herein, you will recognize many known terms and concepts. However, others may be used slightly differently from what you would expect and some may be entirely puzzling.

This is why we recommend that once you are over the first wave of pushing buttons, flashing lights and turning knobs you read this guide end-to-end carefully – and we are aware that no-one likes to read the manual..

Taking a step back, we do appreciate the complexity that Nemo is able to provide. Don't get intimidated! You will soon discover fast ways of operation to best suit your style and preference, the comfort zone where you are most productive.

But remember that only few clicks away await things that you had never thought of doing or achieving. This is what Nemo is about – at every stage and no matter what - you are encouraged to experiment, explore and push the boundaries!

Please check our web site regularly for the latest news, software and documentation at

http://www.genoqs.net

Table of contents

I Nemo at a glance

This section provides an introduction to the concepts at the base of Nemo. The impatient reader may come back to this section once confusion sets in and nothing makes sense anymore.

Connectors and switches

The power supply

Nemo features an auto-sensing 110-240 Volt (50-60Hz) external power supply so you can safely power it up in most countries without extra adapters or converters. All you need is a cable that fits your power outlet.

The power switch

To turn Nemo on and off, please use the black button labeled I/O on the back panel of the machine.

Triggering a reset

Pressing the Record and ESC keys at the same time will trigger a reset of the machine, i.e. a reboot resetting it to the last saved state. When performing a reset please make sure to keep the reset button combination pressed for at least 3 seconds before releasing it.

MIDI connectors

Nemo features two MIDI ports, and each port has its own IN and OUT connector, as found on the back side of the machine. They are labeled accordingly with MIDI 1 and MIDI 2.

Lamp connector

The lamp connector on the back of the machine is designed to operate with any USB-powered lamp, as are often used with laptop computers. Connect your preferred USB lamp to use Nemo in environments that demand it, or if (like us) you just simply like the effect!

USB connector

For the time being, the USB connector on the back of Nemo should be seen as something you should be only concerned with if you are interested in development or change of the Nemo software. Future software releases may use the USB connector to provide extended interfacing capabilities to other USB devices.

The Nemo world

In brief, the Nemo world consists of

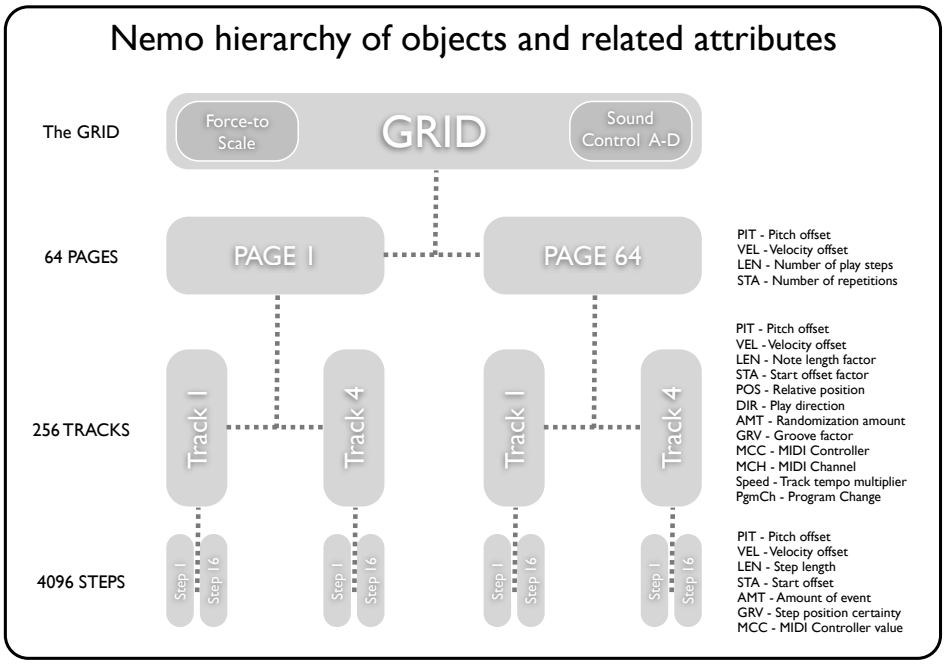
- entities or objects
- attributes that are associated with them, and
- functions that modify those objects or their attributes.

This model allows for modifications of the objects in the most flexible manner and all in real time, with the sequencer running!

The Nemo object model

The master Nemo object is the GRID, which contains PAGES, each of them containing TRACKS, which are made up of STEPS.

Each of these objects is associated with attributes and functions that can operate upon them. The diagram depicts at a high level the Octopus hierarchy of objects and their related attributes.



Navigation basics

The Grid contains all Page objects and each Page is made up of Tracks and Steps. Moving around this hierarchy tree is trivial: to jump between leaves you can always go up a level and down again.

Additionally, in most situations direct paths are also provided, allowing you to jump directly from one leaf to another.

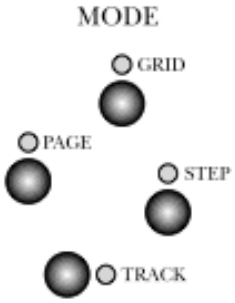
Just as an example, assuming you are in the GRID mode, while editing you would double click the button of a page to zoom into it.

From there, i.e. Page mode, You would do the same to get further down into a specific track or into a specific step.

Navigating back up the tree is only one click away, and will take you directly to the selected level. Or simply use the ESC key to always get to the PAGE level of your current page, arriving at a known starting point.

Similarly, in Track mode, press the selector corresponding to the track you would like to jump to. In Step mode, press and hold STEP and press a grid button to jump to the step corresponding to the pressed button.

Grid



Nemo provides a total of 64 pages grouped in 4 banks of 16 pages each, making up the GRID.

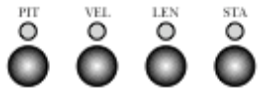
Visually a bank corresponds to one row of the matrix; hence a page corresponds to one button of the matrix.

One page in each bank may play at any time, hence allowing you to play up to 4 pages concurrently.

Note on MIDI data output

Depending on the number of concurrently active tracks and the density of the produced MIDI data, it is possible to overload the MIDI stream. A more complete discussion of various system and MIDI loading is found in the section on System Load Handling.

Pages



One can think of Nemo's pages as track containers. The number of tracks in a page is 4, with a default length of 16 steps each.

Musical structures longer than 16 steps are built by chaining tracks in a page, such that chained tracks are played consecutively.

Musical structures shorter than 16 steps can be built by using skipped steps in tracks, for example. More on this later.

However, the user may also build track chains within one page as desired, effectively creating structures of length 1 to 64 steps.

This, combined with the ability to play up to 4 pages concurrently and each of the 4 pages being part of a cluster of at most 16 consecutive pages gives you a lot of freedom to create musical structures.

Tracks

If pages are Nemo's track containers, then tracks are the step containers. Apart from other attributes, each track has a locator associated with it which can be controlled independently from locators of other tracks.

Steps

In Nemo steps are the smallest meaningful entities, for example notes in a musical context. In track mode the individual steps of a selected track can be modified across their available range of attributes.

Mutators

Entities or attributes of entities can be operated upon using mutators (or functions), for example clear, randomize, modify, copy, paste, etc.

While the modify function is mapped directly to the knobs as described in the operation mode section, the others are invoked by pressing the appropriate mutator buttons.

Attributes

All of the above entities of Nemo have attributes associated with them. The range includes but is not limited to Velocity, Pitch, Length, Start, Position, and others.

All attributes can be modified in real time, during play or stop. Their semantics may differ across entities and not all attributes are applicable to all entities. The attached table gives an overview of the entities and their applicable attributes.

	Page	Track	Step
VEL	+	+	+
PIT	+	+	+
LEN	+	+	+
STA	+	+	+
POS	+	+	
DIR		+	
AMT		+	+
GRV		+	+
MCC		+	+
MCH		+	

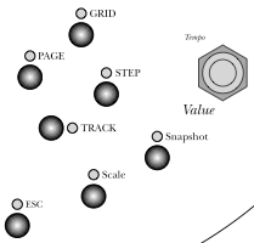
Sound Control (CC MIX TARGET) Maps

The Sound Control Maps are assignments of CC functionality to the Mixer knobs of Nemo.

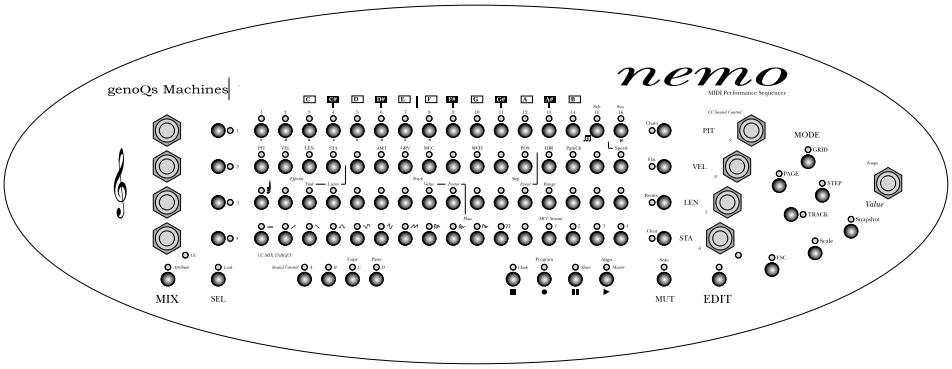
You may use Sound Control Maps to freely assign MIDI Controllers and their appropriate channels to the Mixer knobs, independently of what is going on in the PAGE.

This allows for direct control of external sound sources.

The front panel



The Nemo front panel consists of visual groups which we will name here and to which we will refer in the course of this document. They are explained in a left to right order.



MIX encoders

Each matrix row has a dedicated left rotary encoder – in the MIX (Mixer) group.

SEL buttons

Rows have dedicated buttons in the SEL (Selector) group.

MATRIX

The MATRIX refers to the field of 16 x 4 buttons.

The buttons take on various functions, depending on the operating mode of the sequencer. The most obvious one is probably, when matrix rows represent tracks of 16 steps each.

Right below the matrix is the Sound Control Map field which determines the functionality of the MIX rotary knobs, as well as the transport filed buttons that control the sequencer.

MUT buttons

Rows have dedicated buttons in the MUT (Mutator) group.

EDIT encoders

Rows have dedicated left rotary encoders in the EDIT (Editor) group.

Head (the right hand side of Nemo)

The head is made of buttons that provide a range of functionality that applies across modes and objects.

The head includes the SCALE, MODE, CHORD and Snapshot buttons as well as the rotary encoder we call the MAIN encoder.

Each of the listed building blocks of the front panel takes on specific functions according to the active mode at any point in time.

II First steps

This section is intended to get you up and running with your first sequence, and teach you the basics of Nemo operation in the process. You are expected to use the learned material and experiment further.

Connect and power-on

Connecting MIDI and a sound source

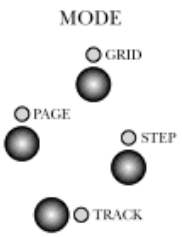
Start simply by connecting just one sound source to the MIDI OUT 1 port and connect Nemo to a power outlet.

For now set your sound source to receive on channel 1 and also choose a pitched sound with a medium release time. Something like piano may be suitable, but don't feel constrained in any way.

Power-on

Power on the unit by flipping the power switch.

If you have connected a USB lamp in the port labeled "Lamp", you should see it turn on immediately, and about two seconds later you should see some of the front panel LEDs turn on.



The LED labeled PAGE should be blinking orange. Congratulations – you are now ready to engage on a long and rewarding journey with your Nemo sequencer!

Upon power-on, Nemo starts in the state that was last saved to its internal FLASH (non-volatile) memory.

When you power up the machine for the first time, or after a memory refresh, the machine is starting up with its "factory default" values.

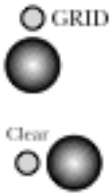
Start with factory defaults

By the same token, if you hold the CLR button down while powering up the machine, Nemo will not load the FLASH memory contents, but will simply start with the factory defaults.

Start-up defaults

The defaults include having the master tempo at 120 b.p.m., all tracks running on direction 1, all tracks set to send on MIDI channel 1 of port 1, and a particular pitch assignment for tracks 0-9 as follows: C3, D3, E3, G3, A3, C5, D5, E5, G5, and A5. Nemo may be reset to this default condition at any time during operation.

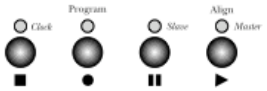
Resetting to start-up defaults



Please note that doing this will erase any changes you have made and possibly want to keep, so use this with extreme caution!

Press and hold the GRID mode button, while pressing the Clear button. Again, this only clears the RAM (volatile) memory contents and leaves the content of the FLASH (non-volatile) memory untouched.

General controls



Nemo features a set of transport buttons, which are no different from what you may know from other devices. Start, Stop and Pause functions are available.

Start

Press the "play" buttons in the transport section. That is the button labeled with the right-pointed triangle.

You will see a red chase light move across the matrix. If you do not hear anything, it is because you have not yet set any steps to play.

Stop

You may now want to stop the sequencer – do that by pressing the stop button – as labeled. Stopping the sequencer will reset the chase light position to zero.

Pause

Once the sequencer is playing, you may also pause it – by pressing the pause button – as labeled. The pause button freezes the chase light at the current step. To continue from pause (to continue) you may press pause again, or any of the play buttons.

You may want to play a bit with the transport buttons to get yourself familiar with how they work.

Master Tempo

Before you continue, you may want to set a different master tempo for the sequencer. Press GRID, and then turn the rightmost encoder – labeled "Tempo" – clockwise (+) or counter-clockwise (-).

As you turn the knob, you will see funny things happen in the top line of the matrix. The line is actually displaying the value corresponding to the current master tempo.

Finally press ESC to return to the page you were working with.

Interface conventions

Number display convention

The red dots have to be understood as multiple of tens, the green dot represents the value of ones in the number on display. When displaying the master tempo a lit up 10 LED adds 100 to the number.

For example, 93 would be represented by LED 9 lighting red and 3 lighting green.

One exception to the rule is numbers where the tens and the one are the same digit - in that case the digit in question will light orange. For example 77 will be displayed as 7 LEDs with LED 1-6 lighting red and LED 7 lighting orange.

Experiment a bit with this and you will get a good feel for this representation quickly. You will re-encounter it at many other occasions as we move along.

Number dial-in convention

While we are here, we may also introduce the number direct dial in.

Double clicking on a number sets the tens (red) value for that parameter and single clicking sets the one's (green) value.

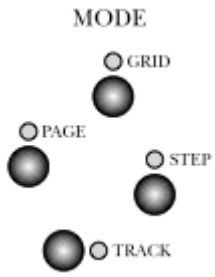
For example double click on 7 to enter 70 and then single click on 2 to enter a value of 72.

This makes it very quick and easy to select just about any value.

As with the number display convention, the click convention is used all across the instrument's interface, so we will run into it over and over again.

Basic step operations

Step toggle



The orange blinking PAGE LED in the MODE field indicates that you are now in the PAGE mode.

In this mode every row in the matrix represents a track, and every button represents a step. This is no different as you would probably expect anyways, knowing that Nemo is a chase-light pattern sequencer. Let's press some buttons now.

Press any of the matrix buttons, and you will see the steps turn on green, indicated by the green lights going on. Pressing active steps will deactivate them, turning them off again.

Make sure that you set your connected sound device to MIDI Channel 1. If you do, you should hear sound played by your synthesizer.

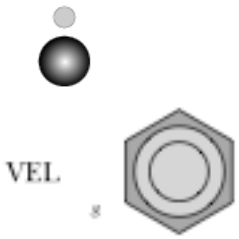
Step skip

Toggling steps is sure fine – skipping them is a different story. It means that the chase-light will simply ignore the step and just move to the next un-skipped one.

To skip a step, press and hold the MUT button while pressing the the step that you want to skip. You will see the step LED turn red. Repeat the procedure for as many steps as you would like.

To un-skip a step and let it plays again, just press it by itself and the red light will go off. Press it a second time - as long as you don't hold the MUT button pressed, you will see it toggle on as an active step.

Step tweak



Use what you have learned so far to compose a simple pattern in one of the tracks. Start the sequencer and you will hear the pattern played, boring as it is, with all steps at the same default levels.

Let's change that by tweaking some Step attributes. We will use PIT here as an example, but the example holds for other attributes as well.

Just "grab" a Step by pressing its button and keeping it pressed (it doesn't matter if it's originally on or off). Now turn the PIT rotary encoder clockwise to increase the pitch of the step.

Turning PIT counter-clockwise will decrease the pitch – one half-tone per encoder click. The PIT rotary is the second one from the top of the EDIT block.

You will now hear that the pitch of the step has changed every time the chase-light passes it.

Feel free to experiment as you wish, with other attributes and refer to the section on STEP mode for details.

Grab other steps and play around until you shape your pattern into something you like before moving on.

Ghost toggle

Press and hold pressed two or more step buttons placed in separate rows. Let's use for instance the rows 3 and 4.

Press a step in row 3 and at the same time a step in row 4 – and make sure you do not release the buttons yet.

Now toggle steps in row 3 – and you will see that the steps in the same column of row 4 will be toggled as well. We call this behavior "ghost toggle".

Basic track operations

Since you now have a pattern you like, but still want to explore, let's make an identical copy of your track pattern first and then modify the copy while keeping the original safe.

On the left side of the Nemo panel you see the block called SEL, to the right of the MIX rotary encoder block. These are the Selector buttons.

Symmetrically to the right you see another block called MUT, to the left of the EDIT rotary encoder block. These are the Mutator buttons. For now we will use the selector button corresponding to our track to "grab" it, and do something – in this case copy it.

Copying tracks

Go ahead and press the track selector button of the corresponding TRACK and keep it pressed. You will see some changes in the LED pattern of the panel; don't worry about it for now. You will see that once you have grabbed a track, the mutator block becomes active and you see that the CPY mutator is now lit orange.

Press the CPY mutator and release the track (move your finger off the selector). You have just copied the track you have grabbed to an internal buffer*.

** You have not copied the full track data, but only a reference to it. This means that at the time of the paste operation you will get the most recent data of the just copied track and not the data at the time of the copy operation. Therefore, any changes between the copy and the paste operation are permanent and not recoverable.*

Pasting copied tracks

Now grab an empty track as described above by pressing its selector and keeping it pressed. You will notice that paste is now available, indicated by the lit PST mutator.

Press the PST mutator to paste the contents of your source track into the destination.

Muting tracks

The result of the previous copy and paste operation is that you now have two identical tracks in the same page.

So all you got is just an annoying double-trigger of your pattern (audible depending on your sound choice)?

Well, for now yes – unless you put one of the tracks on mute.

We will now do just that. To mute one of the tracks, first decide which track you want to mute.

Now simply press its mutator on the right and see what happens: the first press will color the mutator red and the track will not be heard. Done, the track is muted!

Pressing the mutator again will simply un-mute the track, turning the red mutator light off and letting the track play again.

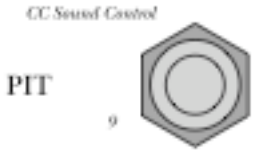
Recalling mute patterns

There is also a way of handling mutes and un-mutes very quickly. Simply select a mute pattern as you normally would – i.e. mute some of the tracks in the page.

As you mute tracks in the page mode observe that the MUT button turns green. Pressing the MUT button will immediately un-mute all muted tracks and you will see it turn red. Pressing it again will recall your mute previous mute pattern.

This functionality is provided to allow for quick mute and un-mute operations during live play, for instance, and the last selected mute pattern is stored. Therefore, removing all mutes in a page manually, i.e. using the mute buttons directly, will also remove the stored mute pattern and make the MUT LED go off.

Transposing tracks



Remember, we wanted to experiment a bit with a track – let's transpose it. By now you probably know how this works anyway.

Grab the track, turn the PIT knob clockwise, and hear how the track is being transposed up.

Changing velocity.. and other attributes

To make things a bit more interesting, take one of the two playing tracks and increase its velocity (do we still really need to explain how this works?

You grab the track and turn its velocity encoder clockwise. If your sound source is velocity sensitive you will hear the change instantly.

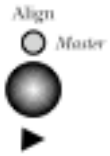
At this point we encourage you to use what you have learned so far to play and experiment, projecting your knowledge on the other things we haven't describe yet. Why don't you start modifying the Track DIR or GRV and see what happens...

Pausing tracks

A track may be paused by grabbing the track and pressing the Pause transport button.

One additional noteworthy feature is that if a track is paused and the Pause button is clicked again, the track will advance one step but still remain paused.

Re-triggering tracks



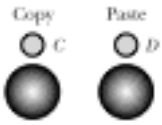
Tracks may also be re-triggered such as to start playing on the first non-skipped step they contain.

To re-trigger a track simply hold it selected in PAGE mode and press the Align (Play) key. The track will re-trigger immediately and will not be aligned to the master clock.

To do a full realignment of the page press Align (Play) again.

Track chaining

Let's assume for a moment that we are back to having two tracks, with the second one originating from the first, but modified to your taste in the meantime.



If this is not the case, let's reset and reconstruct that scenario. You already know all moves it takes to do that!

You use the copy and paste functionality to get the "original" pattern on row 1 and the altered pattern on row 2. Clear everything else.

How to do that? Grab the track to be cleared and press the Clear mutator and the track will clear. Alternatively, just for this exercise you may simply mute it, too. Use whatever method you prefer.

Track chaining

To chain two or more tracks hold them selected and press the Chain mutator. Within a Page you may create any chained track configuration that you like. For example, you can chain all four tracks to build a structure of a total of 64 steps.

Under the hood

You will notice that for now chaining is just a matter of playing individual tracks sequentially in a defined order, and does not influence in any way the parameters you have set for the individual tracks.

However, to build an "integrated" continuous structure that spans more than one track, you have to ensure that the parameters of the chained tracks match up as needed.

Details on how to achieve this are described in the corresponding section in the chapter on the Track mode.

Step real-time entry

There is a simple way to tap steps into a track in real time.

Simply grab the track you would like to tap into – you will notice that the STEP LED in the MODE block turns red.

Step tapping

While the sequencer is playing, tap the STEP key as you go and you will see that the steps under the chase-light get toggled on as you tap.

In fact they are placed into the track at the precise position of the tap, within a 1/192 resolution, trying to reflect to the greatest extent possible what you have entered.

If you are less than satisfied with the results of your play, you may clean up the mess by simply clearing the track as we have already seen before.

Quantization

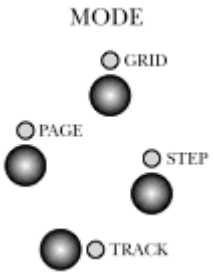
Sometimes you may want to quantize the entered data. We are really jumping a bit ahead of the flow, but is you really want to know - well - it means reducing the STA attribute factor to 0, therefore removing the effect of the STA attribute from the track in question. That means effectively that everything will play „on the beat“.

The MODE block

Keeping focus with the STEP button we have just used, let's talk a bit about the buttons surrounding the STEP button you have just used – in the MODE block.

There are other buttons in here, most of which denote Objects. Their use goes back to the object model hierarchy discussed in the introduction section.

Mode block explained



Generally, the MODE block is used to offer both navigation functionality and orientation.

For example, upon power on you will see that Nemo is in PAGE mode (indicated by the blinking PAGE LED), and that you have an option to switch "up" into the GRID mode (lit green).

Navigation

Here in PAGE mode, you may select a track just as we have seen in this chapter, and you will notice that the TRACK LED turns green, indicating that you may go into TRACK mode.

Indeed, pressing the TRACK button will take you there and the the TRACK LED turns immediately blinking orange.

Similarly, as soon as you select a step in a page (using the SEL button), you will see that the STEP mode may be entered, as the STEP LED is lit green.

Orientation

At any time during operation, you will see a orange LED blink indicating the mode that you are currently in. This is a key navigational landmark, always telling you where you are.

One exception to that rule is in PAGE mode. A red light of the PAGE LED indicates that you are in PAGE mode; however that page is currently not playing in the grid.

A green light in the PAGE LED indicates that the page is solo-ed in the grid. A red light in the PLAY LED is showing that PLAY mode is not active – this will be discussed later.

A second exception to the rule is the GRID TRACK mode. Here both the GRID and the TRACK LEDs are orange, with TRACK blinking.

III Step mode

Step mode is the level at which you can inspect and tweak directly step parameters: the Matrix field is dedicated to information about just one step.

Basic operation

Zooming in

Double-click a step. You will see the display in the MODE field switch to STEP mode, shown by the blinking STEP mode LED. It is helpful to think of this as a zoom into the step you double clicked on.

Some explanation is needed for what you now see being displayed. The various rows indicate the current values for the step attributes.

Finding your position

To see which step is being edited, hold the STEP object button down. You will see exactly one blinking LED in the matrix, red or green.

This blinking LED shows the step you have zoomed into. If it is red, it means it is not toggled on, if it is green, it is toggled on.

You may use the appropriate step key in the bottom row to toggle the step status as you like.

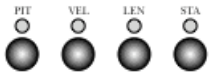
Moving on

Holding the Step Mode button and pressing any key in the matrix selects the corresponding step into the zoom focus of the STEP mode.

Alternatively, if you want to edit a step in the same track, you may press its corresponding button in the bottom row to switch view to that particular step.

This is an easy and fast way to jump from Step to Step directly, without ever leaving the Step mode.

Step attributes

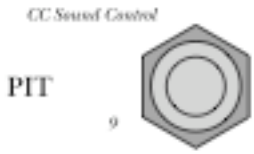


Looking at the front panel you see lots of buttons lit up in row 2, including the ones labeled PIT, VEL, LEN, STA, AMT, GRV, MCC. One of them will be blinking orange, by default that is PIT.

The lit buttons indicate the attributes that are selectable for the step, and the blinking button indicates the currently selected attribute, per default PIT, which stands for "pitch".

You may click in row 2 on each of the lit buttons and observe what happens. In row 2 the blinking moves from one attribute to another, while row 1 displays various information. Clicking on a non-lit button in row 2 will have no effect.

Step pitch (PIT)



Click on PIT again to select the step pitch attribute, and observe the empty row 1. This means that the pitch offset of the step is 0, and the step will therefore play the same pitch as the track is is on.

Turning the PIT knob will change the pitch for the step, which you will hear once the step is played. Also you will see the pitch offset displayed in row 1 as a number, with the red LEDs counting the tens and the green LED pointing to the ones value.

The step pitch offset may be a positive or negative number, always relative to the base track pitch. Negative pitch offsets are indicated by a lit up LED in position 16 of row 1.

Step velocity (VEL)

Select now the VEL attribute in row 2. You should see the VEL button blink orange. The value display in row 1 will switch to display the velocity offset of the step, per default this is 0.

Like the pitch offset, the step velocity offset may be a positive or negative number. The display convention is the same as for PIT.

Please note that the total velocity of a step is determined by adding the individual step velocity offset to the base Track velocity. This allows a wide range of velocities in a track while still giving you one place (the track velocity) to adjust them all up or down and still maintain the relationships set for each step.

Furthermore, there is also a Page-wide velocity value, offsetting the track velocities, but we will discuss this in more depth a bit later.

Note that in order to change the attribute value for any of PIT, VEL, LEN and STA, you do not necessarily need to select the attribute in

row 2 first. You may directly turn the appropriate encoder and the display and attribute selection will change automatically.

Step length (LEN)

The same principles as above apply to all the other step attribute values in the page, except for the display of their values.

Change the length on the step by turning its LEN knob. As you increment the value (turning the knob clock-wise) you will see a green dot advancing up to 11 after which the red value will be incremented.

Each green increment corresponds to 1/192 of a note and each red value corresponds to 12/192 = 1/16 of a note.

The minimum step length is 1/192. Decrementing beyond that point will light the last 4 LEDs green. This means that the step is set to legato mode – i.e. no note off MIDI signal will be played for this step.

The natural maximum length of a step is one full note – 192/192.

Step start (STA)

This row denotes the start of a step. Click on the STA button in row 2. By default you will see that the STA line is empty.

Turn the STA knob clockwise and you will see a red bar go from left to right – you are just delaying ("pushing") the step – every time by 1/192 of a note. The maximum push is 5/192.

Turn the knob back until you reach the default position, i.e. all LEDs are off. Now turn the knob further back and you see now a green bar growing from right to left starting on position 16 of the row – you are pulling the step to the front of the beat.

The current maximum pull is 5/192. Note that the real effect of this setting is directly dependent on the value of the track STA attribute.

Step amount (AMT)

The next parameter in row 2 would be AMT (amount). We will get into the details later, for now it is enough to mention that this indicates the amount to which an event programmed on this step will affect the current track.

Step groove (GRV)

A Step may be delayed at playtime by a random amount of time in multiples of 1/192 of a note. The amount is dynamic and in the range defined by the GRV attribute. The value range is 0 to 16.

For example, a GRV value of 8 means that the particular step will experience a random play-time delay of anywhere between 0 and 8/192 of a note. This is to introduce subtle variations in the feel of sequenced material.

The question here is - since there is no GRV encoder, how to modify the value? Any selected attribute's value may be modified using the main encoder to the right, and that always holds true. We may have modified the PIT, VEL, LEn and STA attribute offsets as well using the main encoder.

Attributes that have no dedicated encoder are modified via this route.

Step MIDI continuous controller (MCC)

The MCC value represents the amount of MIDI CC sent at this particular step position. This of course only applies when the track is told to do so. More on this in the TRACK view.

The display uses a decimal representation similar to that used for VEL, with the exception that is has a "void" value, indicated by 4 green LEDs in the last positions of the track. This means that no value is sent out on that track – since 0 would be a valid value for a MIDI continuous controller.

Step mutators

You may have noticed that the mutator column has lights up the Clear LED. This is because the Clear operation is available for the step that is being edited, and a click on the button will activate it.

Step clear (CLR)

Pressing "Clear" will recall the preset values for the attributes of the selected step and will also turn the step off, if it was turned on before. You will see the step turn from green to red in the bottom row.

The default Step attribute values are:

VEL offset	= 0
PIT offset	= 0
LEN	= 1/16
STA offset	= 0
AMT	= 0
MCC	= none

Exiting STEP mode

If you want to exit the STEP mode, you may press ESC anytime to find yourself back in the PAGE mode. Another option is to go back to the PAGE mode by pressing the PAGE mode button in the MODE selector section of the front panel.

Step selections

After having tweaked a step to anything we were looking for, let's assume that we are trying to make parameter changes to a group of steps in the page instead of just a single step. Take the classic "accent" scenario – where some steps play with a greater velocity than the rest.

One way to achieve that would be to use the method we have described, changing the velocity of a step, then jump on to the next step, and so forth.

A more elegant way to do it is to first select all the steps you want to accent, and then tweak the VEL knob to accent them.

Step select

Switch to PAGE mode by pressing either PAGE in the MODE block or by pressing ESC. Then turn on a few steps in the page and compose a sequence as you like. Note that only active steps may become part of a step selection.

When you are ready, press the SEL key and keep it pressed while pressing the button of the first step to be selected. You will see that both the SEL LED and the selected step will blink green, indicating the step select status.

You may now add active steps to the step selection by simply pressing them, or remove them from the selection by pressing them again.

Turn up their velocity by turning the VEL encoder and you should hear the change immediately. You can now of course change any of the step attributes – the pitch, the length, and the start, by simply turning the corresponding knobs.

This method produces a relative change. In other words, increasing the velocity by 10 will add 10 to the current velocity of each selected step. It does not force all selected steps to the same absolute value.

To exit the step selection mode, press the SEL button again. Note that the step selection is not remembered for later recall. Alternatively you may also press the ESC key to return to normal operation.

IV Track mode

Track mode is the level at which you can inspect and tweak directly track parameters: the Matrix field is dedicated to information about just one track.

Basic operation

The TRACK mode provides similar functionality to the STEP mode for any track and its attributes.

Zooming in

Entering TRACK mode, i.e. zooming into a track from PAGE mode is easy and should be predictable by now: decide which track you want to zoom into and double click its selector button.

For example, by double clicking selector number 2 we would zoom into Track number 2. You can get back to PAGE mode by pressing ESC or PAGE.

The display changes to showing some values, using the same convention you have already encountered in the step mode.

Some things are new though. Let's fly briefly over what we see in the case of the default values for Track 2.

Your position

Starting on the very left in the SEL column you should see the track selector number 2 blink orange. This is to tell you which track you are currently looking at.

Pressing any of the other track selectors will take you to their corresponding tracks. Also, clicking any of the MIX encoders will achieve the same effect.

Track attributes

Track velocity (VEL) and pitch (PIT)

The velocity (VEL) values are displayed in the same manner we have seen in STEP mode. However, pitch values are displayed using the scale depiction on the front panel as an orientation. The actual note is denoted by a green dot, while the octave is denoted by a red bar.

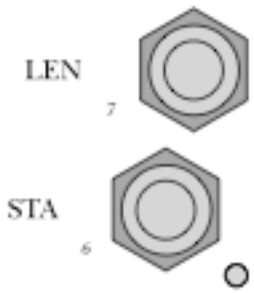
For example, G#5 will show as a green dot at G# and a red bar across 1, 2, 3, 4, and 5.

Also remember the meaning of the shown values: they represent the base pitch and velocity values to which the appropriate step offsets are applied.

Under the hood

When playing, the values of the steps in that track are added to the base track pitch or velocity. As a consequence, the baseline for a track is set by the track pitch and velocity. Step values are just offsets to this base. Nemo uses the convention that middle C (MIDI note #60 decimal) maps to c5.

Track LEN and STA factors



The LEN and STA values are referring to the length and start factors of a track. The STA and LEN factors are simply multipliers that are applied to the STA and LEN step offsets in that track.

This means that a high factor value will result in the effect of the STA or LEN offsets being amplified, while a low factor value will result in the effect of the step offsets being diminished or voided altogether.

In the middle setting of 8, the effect of the map is unchanged and therefore played "through".

In the zero setting, the STA and LEN step offsets will be ignored altogether, while in the 16 position the maps will be amplified by a total factor of roughly 2.

As an example, have a track play some default length notes, and simply turn the LEN knob to the left. You will hear that the note lengths are decreasing as you go, and quite the opposite will happen as you turn the knob to the right.

For the STA factor, use a track with notes playing off the beat (so you hear the effect). Reducing the factor will play the notes closer to the "on the beat" time, increasing the factor will move the steps further away from the on the beat position.

NOTE: To modify the actual length and start point of a track, use the step skip option.

Track amount (AMT)

AMT represents the amount of randomization applied to the track when the Remix function is called.

Track groove (GRV)

The GRV value determines how much shuffle is applied to the track – the range is 0 - 16.

The shuffle means that the steps with an even index in the track (i.e. 2, 4, 6 ... 16) will be played with a delay. The larger the GRV amount, the longer the delay.

Track MIDI continuous controller (MCC)

The MCC value determines whether or not this track sends MCC. The "none" flag is represented as four green LEDs in the positions 13-16. The value range here is of course 0-127 and please keep in mind that a value of 0 (zero) would indicate a valid controller value.

Two exception are the BENDER and CHANNEL PRESSURE flags.

The BENDER flag is shown as a red dot in position 16 of the MCC row and is indicating that the track will be sending MIDI pitch bend messages according to the MCC values stored in that track's steps.

The CHANNEL PRESSURE flag is indicated by two red dots in the positions 15 and 16 of the value row, and is telling us that the track will be sending CHANNEL PRESSURE messages according to the MCC values stored in that track's steps.

Track MIDI channel (MCH)

The MCH value determines the MIDI channel for this track. Default value for all tracks is channel 1 on port 1. This is represented by a green light in position 1.

Now turn the main rotary encoder slowly to the right until you reach 16. Turning it once more to the right will light the LED in position 1 red. This means that channel 1 on port 2 is now selected. Therefore green 1-16 assigns a track to MIDI port 1, red 1-16 to MIDI port 2.

Turning the encoder one click past the position 16 red will produce a green blinking position 1. While you are choosing the right MIDI channel for your track, be sure that the numeric representation is a

solid green or red, and not a blinking one. Blinking representations are related to virtual MIDI channels, covered in a separate section.

Track position (POS)

Turning the main encoder while POS is selected will shift the steps of the track around, depending on the turn direction.

Track direction (DIR)

This attribute indicates the chosen play direction for a track. Consider it as an index into the following default mapping:

1 – Forward play

2 – Reverse play

3 – Ping pong

4 – Random order

5 – Brownian, i.e. 2/3 probability forward, 1/3 probability reverse play

Track program change (PgmCh)

Tracks may carry a program change value that will be sent out on their MIDI channel as soon as it is dialed in via the main encoder or the row 1 key. Also, the program change will be sent out when the sequencer is started from a stop state.

Track data direct entry

Most of the parameter values in the TRACK mode may also be keyed in using the matrix buttons. Typically a single click will move the ones value to the pressed value, a double click will set the ones value to zero and move the tens value to the double clicked value.

Track mutators

While in track mode you may have noticed that the mutator column has several LEDs lit up. They are labeled according to the mutator functions that they trigger.

A lit up mutator indicates that it is available. Please note that all mutator functions described here are also available from the PAGE mode, as soon as a track is selected.

The further explanation below is not in the order depicted but rather in the order of the complexity of the functions. In this case it happens to be bottom-up. Notably Chain will be handled it its own section on track chaining, since it is a function that applies to tracks but is called from within Page mode.

Track Solo

Pressing the SOL button solo's the track within its page. Note that no other pages playing concurrently will be affected. Pressing it again will un-solo the track in the page.

Track Clear

CLR will recall the preset values for the selected track. Only the MIDI Channel assignment (MCH) will remain unchanged.

The pitch is set to the default value of 60. The factory pitch assignment can be recalled by calling Clear upon a PAGE. If you are at the PAGE level and grab a Track and clear it, everything is reset.

Track Remix

This will create a random step pattern in the track, not affecting the other parameters in the track.

Track Flat

The Flat function is used mainly to combine the pitch content of several tracks into just one track in the same page.

This function was conceived as a creative tool and not as a track space-saving feature, as it may appear at first sight. In some instances it may be useful as such, but just in some. Please keep this in mind!

FLT will only become available when you have selected two or more tracks in a page. There is a notion of a destination track, which is always the one from the selection with the lowest index.

Applying FLT to the track selection will fill the destination track with content from the source tracks.

For every active step in any of the source tracks, you will get the corresponding step activated in the target track. Skipped steps will simply be ignored.

If more than one step is active in the same column across the selected tracks, the lowest 7 pitches of active steps will get stacked to form a chord on the respective step in the destination track.

Note that if source track steps contain chords already, only their base pitch will be considered for FLT. The additional chord data in the source tracks will be ignored.

The base pitch of the resulting chord will be the lowest pitch encountered in the respective column, with the other found pitches being stacked on top.

Another detail worth mentioning is the influence of FLT on the VEL, LEN and STA values of the steps in the destination track. FLT always carries over the VEL, LEN and STA attributes of the last encountered active step for a particular column/position inside the destination track.

Also something to realize is that FLT is MIDI channel agnostic – you may FLT different tracks playing on different channels, but the result will always play on the MIDI channel of the destination track.

With that in mind, let us suggest two best practice usage methods for FLT. Firstly, before you are applying FLT to your track selection, make sure the target track is muted.

This way you do not get any double notes playing if the target track is set to the same MIDI channel as any source tracks. You then can do a smooth blend-in of the new material, which may be useful when playing live for example.

Secondly, you may want to make sure the target track MIDI channel is different from any of the source tracks before you apply FLT. This will effect the obvious – the new material is going to sound fresh right away. And of course you can use both of these techniques combined to achieve the result that is best for you!

Track remixes (RMX)

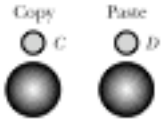
The track remix is used to generate variations of a track without altering it too much. It does have some random elements which are influenced by the value indicated in AMT.

Below is an overview of what the RMX function does:

Influenced map*	Random map shift	Random step offset
VEL	+	+
PIT	+	
LEN	+	+
STA	+	+
POS	+	

**see section on track attribute maps for details on what this means.*

Track Copy and Paste



Copying and pasting tracks has already been described earlier. The functions are also available in Track mode.

A track is selected and copied into an internal clipboard and from there pasted into the chosen destination.

Track selections

Sometimes it may be convenient to make a change to more than one track at once. This can be done easily using the same method you have already seen in the STEP chapter.

Creating track selections

For this to work make sure you are in PAGE mode. Hold down SEL and then press the selectors of the tracks you would like to add to your selection. The track selection you have just created will stay active for EDIT operations until you press the SEL button again and will stay locked for you to edit.

Track selection recall

Once you press SEL, the selection will be deactivated, but SEL will store the last track selection you have made. Pressing SEL again will bring back your previous selection.

You may now tweak the Editor knobs or use available (read: lit up) mutators and other functions to modify them.

Shortcuts

There is also a quick way to select all tracks in a page at once – simply double click on the SEL key and keep it pressed – you will see the full column of SEL LEDs light up.

Equally, to mute all tracks in a page at once you may double click on the MUT key.

Track chaining

Track chains explained

A track chain is simply a defined sequence of playing tracks from a page, in a given consecutive order. Track chains are always configured in PAGE mode and are useful in creating structures longer than 16 steps per page.

Playing considerations

Chain configurations influence the set track parameters. Each track's steps are played using the same set of track parameters at the base. The reference point is always the head track of a chain meaning that the tracks will be played taking over the values held in the head track as a base reference.

Selecting chain members

While in PAGE mode, define first the group of tracks that you would like to chain by creating an appropriate selection.

Creating a track chain

While the selection is active (blinking orange), press the XXVIII button to build the chain made up by these tracks.

You will now see that they start playing in sequence. The play sequence is per default top to bottom (i.e. row 1 to row 4).

Under the hood

Every chain has a head and a tail. The head is a track, while the tail may be made of none, one or more other tracks.

When you create a selection, the top-most track of a selection will be defined as the head of the new chain, and the other selected tracks will make up the tail.

Should any of the newly chained tracks have been part of a chain before (regardless if head or tail); they will be removed from their original chain(s) and added to the new one. The original chains will simply get reduced by the tracks re-allocated to the new chain.

Showing track chains

Once a track chain has been created, you can also easily see how it is spread across the page.

Simply select a track that is part of a chain, and you should see the following information in the selector LED column.

The track selected (one you have your finger on) is blinking orange.

Other track members may be lit green and red. In red you can recognize the head track of the chain, in green the other chain members that are not the head.

If the head and the selected track are the same, you will only see a blinking orange LED.

Track base switch

You can configure page chains to use either individual base values (the track respective ones) or to use a single common track base value, that of the head track.

To do this you may simply toggle the MIX Attribute button between green and red.

Green means that tracks are being played in their natural state but in chained order. Red means that the tracks will be played taking over the values held in the head track as a base reference.

Muting chained tracks

One more thing to mention about the track base for a chain - in the context of muting or un-muting tracks that are actually part of a chain. The mute operation of any chain members will apply to all tracks in that chain.

Note that it will be a toggle operation, so it will invert the mute pattern of the set of chained tracks.

Track speed

Operation and selection

To change a track's tempo multiplier, go to Track mode, and in the second row click on the Speed button. As soon as the selection of Speed is active you should observe the indicator in row 1. By default it is a red 1, showing a multiplier of 1, i.e. plain master tempo.

Click on the second button of row 1, labeled 2. You should see in the bottom row that the speed of the track has doubled. Pressing the 3 button will select a multiplier of 3, and so forth. The available multipliers are 1-8 and 16.

Additionally you may also select a speed multiplier of 1,5 by pressing button 15. This button is denoted by a triplet symbol on the bottom.

To select master clock divisors (i.e. 1/multipliers), use the same keys as described above, but double click to get a green indicator.

Considerations

Note that when the sequencer is playing, the changes of the track clock multiplier are effective on the next 1/16th beat of the master clock and not immediately. This provides better track alignment and improves the general feel of the sequence without the need to explicitly align after a track clock switch.

Realignment of the tracks may always be done by using the ALN functionality available.

Track auxiliaries

Track chase-light

If you are in Track mode while the sequencer is playing, you will notice a chase-light in the row belonging to the track that you are editing. This is just to help your orientation.

Track view switch

Let's assume you have now edited a track's parameters and now would like to adapt another track's parameters to some change you have made. One way is to use ESC or PAGE to exit the track mode and zoom into the new track as you have seen it before.

A much quicker way is to click in any direction the MIX knob corresponding to the new track. The display will instantly switch to showing parameters of the new track. Alternatively you may simply press the selector of the new track to achieve the same effect.

This function is particularly useful when you are dealing with chained tracks, where some change in a track may directly imply that the next track in chain will have to change as well.

V Page mode

Page mode is where you play Nemo in the traditional step sequencer way: the matrix is a field of 4 tracks and 64 steps, all waiting to be played!

Basic operation

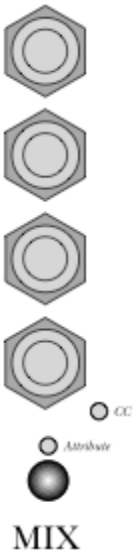
We have all along used the page mode as a starting point, from where we have been zooming into the other elements, notably tracks and steps so far. It is time to take a closer look at what else is going on in the PAGE mode itself.

By holding down the PAGE button in the Mode block, generally all pages that contain data will be displayed with either green or red LEDs in the matrix.

Exactly one of them will blink orange, pointing out to you the grid position of the page you are currently in. Please refer to the introductory chapter on general concepts to get an overall view of what the grid is.

This function is a useful navigation tool, showing you not only what else is going on in the grid, but also where you are currently with regard to some other content in the grid.

The MIX block



In the previous sections we have talked to a large extent about what the EDITOR block does – in short, it is used to change the attributes of a selected entity, track or step, where applicable.

The MIX block may do one of two things: it may either change a particular attribute value of the tracks corresponding to each of the knobs, or it may send out sound control (CC) data via MIDI.

To choose the track attribute to be modified simply hold the MIX button pressed and you should see in row 2 all relevant track attributes light up green, with one of them blinking orange. You guessed it by now - the orange blinking one is the selected attribute. With the MIX button still pressed, select any other track attribute you like to assign the MIX block another attribute to modify.

Attribute MIX maps

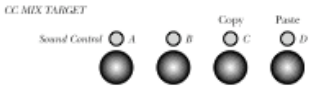
Double click the MIX button. The four matrix rows show the corresponding values for their tracks, and for the selected MIX attribute. Generally, we call this view the "MIX map".

At the moment you have an attribute selected for the MIX map. To verify which attribute this is, hold the MIX button pressed again and you should see in row 2 a picture you are already familiar with: all available attributes in green, with the selected one blinking orange.

Also, if the selected MIX attribute is any of PIT, VEL, LEN, or STA, and as a shortcut, there will be an orange blinking LED in the appropriate row of the SEL column. The orange blinking LED indicates the attribute that is being shown: PIT, VEL, LEN and STA, in this particular order for selectors 1-4.

CC MIX maps and Sound Control

An additional species of MIX maps are the ones related to Sound Control via CCs. These are explained in their separate section. For now it suffices to understand that they provide separate functionality using very similar operation principles.



To select a CC MIX map you would simply press any of the Sound Control buttons A, B, C, or D.

Working with MIX maps

As you have seen already, while viewing MIX maps, you may work with a particular track attribute value directly, for all tracks at once.

You may tweak the value of any one track, or apply some functions to all tracks in the page.

Clear

Clear the MIX map using the CLR button – this will reset the MIX map to default values for each track in the page, all at once.

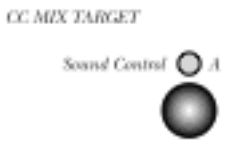
Randomize

You may randomize the displayed values using the Remix button. This will assign random values to all tracks at once, and only for the selected attribute of course.

Align

Using the Align function you may re-order the tracks in the page, sorting them in the page by the values of the selected MIX MAP attribute. The sorting will be done such that the track with the highest value will be placed on the top row. Try it out!

CC MIX maps and Sound Control



Using a CC MIX map, any MIX knob can be assigned an individual CC on a chosen MIDI channel. This is best explained using an example: from plain Page mode double click on Sound Control A to edit it.

By default you will see the number 64 displayed in every row. Now press and hold the MIX button. Notice that the AMT button will blink orange in row 2 indicating that AMT is selected for display. Therefore, the matrix shows the per-track AMT values.

With the MIX button still pressed, select the MCC button. Release the MIX button and now you should see the Midi CCs assigned to each of the tracks.

You can now modify the CC for every individual track using the rotary knobs. Remember that four green LEDs in positions 13, 14, 15, and 16 indicate that no CC has been assigned.

Using the same procedure, select the MCH view to show the MIDI channels. This view allows you to assign the MIDI channel on which the CC signal is sent for each of the knobs.

Note that this MIDI channel has nothing to do with the actual MIDI channel of the Track – the track's MIDI channel is an entirely independent parameter used for the track's output. The Sound Control MIDI channel is used for the CC sent by the encoder.

Timeout

The MIX block may be used at any time during Page and Grid mode operation. In order to make the effects visible, once you operate any of the MIX encoders back in Page mode you will see its value displayed briefly in the corresponding matrix row.

The value will disappear shortly after you have performed the last click, to clear the view for the regular contents of the track.

EDIT state

Nemo provides a quick way of previewing steps, in the sense that you can immediately hear what they contain, and how they would play under the chase-light. This applies to their inherent note data and does not account for any modulation that may actually take place at runtime.

This is particularly interesting of course when you are tweaking something to sound just right.

By default, in Page mode the EDIT LED button lights green. Click on it to toggle it to blinking orange (and back to green).

When the EDIT LED is green, everything behaves as you know it: the step buttons toggle the step states. When blinking orange you are in the EDIT state.

EDIT-ing Steps

First make sure the EDIT LED is blinking orange, i.e. that you are in the EDIT state.

Now press some buttons in the matrix. You will notice that no steps will be set (as we have done it before), but that the MIDI data of the steps is played out of the MIDI port as it is.

Grab a step and now tweak its attributes, for example pitch, to take the most obvious one: you will hear that with every click of the encoder the steps is re-triggered and played such that you can hear the change in real time.

The step velocity is shown and editable in the numeric quadrant of the outer circle, the pitch in the inner circle.

The step length may also be adjusted in the matrix, by pressing another button at a distance to denote the length in 1/16th intervals.

EDIT-ing Tracks

Pressing the track selectors in preview mode will produce a result similar to the steps buttons.

The note played will basically reveal the tracks velocity and pitch settings, producing a result equivalent to having a non-modified step playing in that track.

Editor ATR state

In Page mode, the EDIT encoder group may be temporarily assigned an attribute of PIT, VEL, LEN, STA to be modified while in Page mode.

Engage

To engage it, hold any of the track selector buttons 1-4, while pressing the EDIT button. This makes the actual assignment of the attributes PIT, VEL, LEN, STA respectively, and the indicator for the Knob group will light orange, indicating activity.

In this mode the EDIT knobs will behave just like another group of MIX knobs for the just selected attribute.

Disengage

Pressing the EDIT master button once will cancel the assignment and return to the legacy mode of operation.

Editor MCC state

The EDIT button has one more state – that is the MCC send state. This is used to make the editor knobs send MCC data.

Sending MCC data

The MCC amounts sent will be on the MIDI channel and controller chosen in their corresponding tracks. See section on Track Attributes if you don't remember the details for setting up Track MIDI CCs.

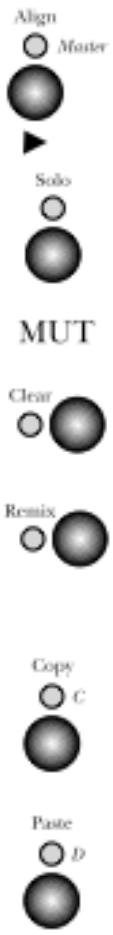
Engage

To activate the MCC state, double-click on the EDIT button turning it orange.

Disengage

To deactivate the MCC state, just press the EDIT button once.

Page mutator functions



When in PAGE mode, holding the PAGE key pressed will show the position of the actual page in the grid, and also make some mutator functions available for the page itself. Here they are:

Play

Pressing the Play button will toggle the page play status in the grid.

Solo

Page will be solo-ed and un-solo-ed. When solo-ed, the Page LED in the circle will blink green as opposed to orange

Clear

Using CLR on a page will reset the page to the default page values, including resetting the tracks to their forward moving direction.

Remix

If the page is cleared, i.e. a Clear operation has just been performed, Remix will fill the page with random step patterns on all tracks. Note that the track attributes are not affected, just the step patterns. If the page already has content, all tracks in the page will be applied the Remix function. See track mode for details.

Copy

The Page can be copied to the copy buffer.

Paste

Copy buffer will be pasted into the present page position.

Page position in the Grid

Another function available is jumping to another page of the grid. As you press the PAGE key you will notice a orange LED blink in the Matrix. This indicates the position of the current page in the grid.

Switching pages

Holding PAGE pressed and pressing a matrix key other than the one blinking and in any row other than row 0 will take you directly to the page associated with that key in the grid.

This is especially useful when you are working on musical structures spanning several pages.

Snapshots

The Snapshot function mode provides the capability to try new things in a page, in a non-destructive manner.

Press the Snapshot key to take a snapshot of the currently playing page in a bank for later recall. That could be for example as soon as the results of your editing do not live up to your expectations.

Also note that the Snapshot function may be called from both page mode and from grid mode.

Taking a snapshot

To take a snapshot press the green Snapshot button on the right hand side. As soon as you press it you should see it blink orange.

Now make all the changes and editing that you need to make to your page, until you reach a point of satisfaction, or possibly slight regret.

Make changes permanent

To keep the page, simply press Snapshot again to make the changes permanent. The Snapshot LED will turn back to green.

Discard changes and recall snapshot

To discard the changes since you took the snapshot, double click the Snapshot key, which will recall your old state.

Note that stopping the sequencer (pressing Stop) is equivalent to restoring your old state, i.e. you will lose any changes made since you took the last snapshot.

VI Grid mode

Grid mode is the level at which you control at large amount of MIDI data at once: the Matrix field now gives you instant and direct access to 64 pages!

Basic operation

The Grid mode will typically be the mode used to control a large amount of sequence data at once.

For example, sets of active pages can be stored and recalled using the page set snapshot feature, together with the function of saving the full instrument state for recall even after a power off or reset cycle.

Entering Grid mode

To enter the Grid mode simply press the green lit GRID button in the MODE selector section of the front panel.

Global master clock

The master clock runs through 16 cycles after which it starts over. This is the lowest-level Nemo clock and the only interaction you have with it is when you change the master tempo.

Where are you from?

As a simple reference and reminder as to which page you came from into the Grid, you may press the PAGE button in the MODE block and you should see a orange blinking light at the respective position.

Note that this shows something you can think of as the “page in focus”, or page cursor, which changes however as soon as you start operating on pages from the Grid mode, as we shall see described in this chapter.

Page operations

In GRID mode, you are looking at all your pages at a glance: every button in rows 1-4 represents a page, and the LEDs indicate the status of the respective pages.

LED matrix representation

An off LED means the page is empty, green means the page has some content and is playing, and red means the page does have some content and is not playing.

There is also the situation where page LEDs may turn orange, indicating that the page is queued up for playing, more on that later.

Grid EDIT and live modes

Furthermore, you should take quick notice of the EDIT LED. It should blink orange to indicate that we are currently operating in Grid EDIT mode.

By the end of this chapter we will have seen the Grid live mode as well. Let's stay focused on what we have, for a moment..

Zooming into pages

You will see that the ESC LED is lit up in Grid mode. This provides a quick way to return to the page you just came from – assuming it is still the page in focus, i.e. the last page that was operated on from the grid mode, or the one we have just zoomed out of.

In order to get back into a page, any page, you would either double click on the button corresponding to a page, or simply select the page by holding down the Page mode button and then pressing the page. What you finally choose is up to your personal style and workflow.

Page considerations

If the PAGE mode LED is flashing red, the selected page is not active. Hold the PAGE button and press Play to make it active.

The underlying principle for working with pages in the Grid is simply put "grab and operate", but this should be no surprise this far.

Page clusters

So far we have only played pages one by one. There is a way to make pages play consecutively; this allows you to create structures longer than one page alone has to offer.

Building clusters

In order to play two or more pages consecutively they have to be situated next to each other in the Grid. You can achieve this easily by using Copy / Paste / Clear operations in order to create what we shall call page clusters.

A page cluster is therefore a group of two or more adjacent pages surrounded by either empty pages or grid margins.

Cluster activation

Create a page cluster consisting of three pages in a row of your choice. Once the cluster is built, make sure the sequencer is playing and toggle one of the pages in the cluster to green (i.e. make it play). The page will keep on playing.

Activate cluster play for the row in which the cluster exists by pressing the SEL button of that row once – toggling it from red to green. When green, you will notice that once the currently playing page is finished playing the next page in the cluster starts to play and so forth.

Side notes on page clustering

In total you may set up to 16 pages for consecutive play (maximum size of a cluster). Assuming that all pages have all their tracks chained up (4 tracks per page) this means we get a total of 64 x 16 = 1024 steps playing consecutively.

Add to that the capability of allowing any page to be repeated up to 16 times – let's look at that next.

Page play parameters

Page repeats

Page clustering can become even more fun, as you can set the number of repetitions individually for each page. For example, page A can play 4 times, page B 2 times and page C 1 time, etc. The number of repetitions can be any value between 1 and 16, where 1 is the default value.

In order to set the repetition value for a page, simply keep it pressed and turn the STA encoder – to select any number between 1 and 16.

Page length

As we have seen, clustering pages is a way to create structures spanning more than one page.

However, if you have worked with pages that contain tracks of different lengths and had these be part of clusters, you may have wondered what determines the moment of switching from one page to the next.

In short, the switch mechanism between or across the pages relies on a variable that we term the "page length". Using the page length variable you may influence the page switch behavior directly and can create some rhythmically interesting results.

To set the page length of a page, make sure you are in GRID mode, and from there press and hold the button of the page whose length you want to read or modify.

With the button of the page pressed, turn the LEN encoder to select a value between 1 and 8 x 16.

The default is a red LED in the first position of row zero. This indicates that the page is playing a full 16 step cycle. Note that the maximum length of a page can be set up to be 8 cycles, or 128 step lengths, and the minimum is one step.

Page trigger behavior

Page lengths below 16 steps will cause the page to re-trigger every time a start is invoked (see page repeats). This is useful when you create chopped-up beats and the like.

If the page length is 16 or greater, the page will continue playing on new starts and will not re-trigger. This is to allow long evolving sequences originating all in one single page.

VII Performance tools

This section presents some tools that are especially useful in performance situations, allowing for unmatched freedom in your workflow!

Working with pages

This section is assuming we are working in the Grid mode, where we have control over the behavior of individual pages.

The Matrix field keys in rows 1-4 represent pages. At any given time, only one page in every row (bank) can be playing. So there may be up to 16 tracks playing concurrently.

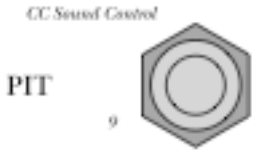
Page activation

In order to activate a page for play you just hold it pressed and press Play. Repeat the procedure to deactivate it. Note that Play will have an effect on a page only if the page is not empty (i.e. its LED lights red or green).

Page mutator functions

When you grab a page, you will also see that there is a set of mutators available for the page. Their effect is the same as the one described in the Page section of this manual. The available functions include Solo, Clear, Remix, Copy, and Paste.

You may want to experiment a bit without knowing too much about their details. For the time being just make sure the page you are working on is also playing.



Page transposition (PIT)

When a page is selected in the grid, you may notice that the indictaor of the EDIT encoder block lights up. It indicates that the encoders are available for operation. Therefore, you may use the PIT encoder to transpose the page as a whole.

Page velocity factor (VEL)

Similar to the factors we see in conjunction with the track attribute maps, there is a page velocity factor that may be adjusted from the

grid mode. The page velocity factor is a master determinant of the velocity produced by note content in a particular page.

If the patch on your sound source is velocity sensitive, you should be able to easily create fade-ins and fade-outs using this functionality.

Select a page in the grid, and while selected, turn the VEL encoder.

Realigning pages

Depending on operations you may carry out in the pages themselves it is easy to get pages to play out of sync. In order to get them all aligned back to the master clock you can press the Align button, like you did for tracks inside a page, earlier on.

Grid mode bank mutes

In Grid mode, when no page is grabbed (i.e. held down), the mutator buttons mute and un-mute the respective page bank.

Grid live mode

In Grid live mode the matrix buttons will act as toggles for the respective pages. This provides more immediate and intuitive handling of material in live situations.

Switching to Grid live mode is quite easy: make sure the EDIT LED is green. From the blinking orange (default) state press it once to turn it green.

Operating in Grid live mode is easily explained. In principle, the page buttons now act as page toggles, much similar to the way things work in page mode, where buttons act as step toggles.

Pressing a page button that is red (page is not playing), will turn that page on. Pressing the button of a playing page (green) will turn that page off. That simple.

Working with step selections

Inverse step selection editing

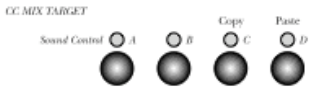
Back to Page mode, active step selections are edited using the EDIT encoders for the respective attribute.

Additionally, when a step selection is active, the steps that are not selected in the page may be edited as well, using the MIX encoders of the respective attribute, where again the mapping 1-4 applies to PIT, VEL, LEN, STA.

For example, assuming a step selection is active, the EDIT encoder PIT modifies all steps in the step selection, while the MIX encoder 1 will modify the pitch of all steps that are currently not selected.

Step selection stores

In Page mode, active step selections are stored for later recall in one of 4 stores available per page. This allows to group steps and modify them at once beyond track boundaries.



The stores 1-4 are accessible while a step selection is active via the buttons labeled A, B, C, D in the CC MIX TARGET block below the matrix. Just to give you an example..

To make a step selection hold the SEL button pressed and click on at least one active step (green) in the page. You should see the selected step blink green and the current selection indicated by the blinking light in the Sound Control row. By default it should be A.

Now press the B key in the MIX TARGET area and the selection will disappear. This is because step selection B is empty. Let's fill it. Press and hold the SEL button and select another step or more and watch them blink.

Press the A button in the MIX TARGET area and you should see your previous selection blink active. You can toggle between your selections at will using the MIX TARGET buttons, and use the encoders to really bend your material.

Grid-Track mode

GRID-TRACK is a sub-mode of the Grid Mode. GRID-TRACK provides most of the Grid functionality described above, allowing a different view on your MIDI data.

Here, matrix buttons represent tracks and have the functionality of track selectors, as described for the Page Mode. We may refer to them as virtual track selectors.

Entering GRID-TRACK

To enter GRID-TRACK press GRID first and then press the green-lit TRACK button. The TRACK button will blink orange, and the GRID button will stay lit in orange. This is the indicator for the GRID-TRACK mode.

Remote track selectors

The Matrix appearance needs some explanation now.

For each page playing in the GRID, you will see a lit bar of 4 LEDs, from position 1 to position 4, leaving three blank columns of buttons on each side. Each lit button acts as a remote track selector and the LEDs indicate the toggle state of the corresponding track.

The term remote track selector is used to express that the buttons act as if you would have displaced the actual track selector from their pages and placed them somewhere else - in this case in the GRID-TRACK matrix.

Hands-on

As an example, let's assume there is only one page playing in the GRID in bank 1 of the grid and no tracks are muted in that page. You should see a bar of 4 green LEDs in row 1, positioned on the left part of the row.

Working with tracks via remote track selectors

The EDIT block indicator blinks orange, as you may use the encoders to modify the track selected via the remote selectors. This should come pretty naturally (or so we think).

Zooming into tracks

You may do much lower-level editing of tracks, simply by double-clicking a virtual selector to enter TRACK mode for that track, i.e. zooming into that track. And you know your way around there already. Coming back to GRID TRACK is easy - simply press GRID.

Grid-Track live mode

The GRID-TRACK live mode is much similar to the live mode in Grid mode. Enter it by pressing EDIT. The EDIT LED should turn from blinking orange to steady green.

When in live mode, the matrix buttons will act as toggles for the respective tracks. This provides more immediate and intuitive handling of material in live situations.

Leaving Grid-Track mode

In order to exit the GRID-TRACK mode, press either the GRID or the TRACK button. Both of them will simply take you back to Grid mode. Or press ESC to return to the page currently in focus in the Grid.

VIII Musical tools

The section provides descriptions for tools that are of value on the musical side of things, such as chords and scales.

Step chords

The next section will assume we are working in Step mode. To follow along, please make sure to enter Step mode before we move on.

Steps may be set to play more than one pitch at a time, effectively forming chords. Chords can be directly programmed in, or directly recorded (see the section on MIDI In Recording) into a Step.

To set the stage, go to Step mode first and look at the content of row 3. Three options are available: Chord, Value and Event, where chord is the button placed in the first column of row 3.

Click on the Chord button to switch view to Chord. You should now see in row 1 a blinking LED, indicating the pitch of the current step, and in row 2 the options PIT and STA available. Per default PIT is selected and blinking orange, telling is that what is shown in row 1 is really the pitch of the step.

Chord ground rules

Step chords are formed of up to 7 notes which may range over up to three octaves. The chord is made up of the step pitch as the base and additional notes that are stacked "on top" and which are always higher than the base pitch. This means of course that changing the PIT offset of the step will also transpose the chord.

The chord display should be read as follows: the base pitch of the step blinks orange. Notes within one octave (12 semitones) of the base pitch will light orange. Notes in the second octave up light green, and notes in the third octave up light red. A note may not be part of the chord at the same time in several octaves.

Building chords

To build a chord in the step simply add notes to the base pitch. All you need to do is press the key notes of row 1 and you should see the corresponding LEDs light up. For this the following toggle sequence applies: off > orange > green > red > off.

In the process above, make sure to not press the button of the base pitch – we will explain this a bit later - it has to do with step re-triggers (explained further in the text).

Every time the step is played, you should hear the chord that you have programmed in. To remove the chord from a step, simply remove all "extra notes" from the chord. The base pitch will not be removable at any time.

Steps that are set to play chords will be shown in the Page mode as an orange dot. Steps that play only single notes are green.

Strumming chords

Back to Step mode and looking at the chord you may have built before, you may now strum it.

To do so select STA in the second row, such that the STA LED is blinking orange. By default row 1 will not show any value - yet. Now turn the main rotary clock-wise. You will be able to set a strum level between 0 and 9 shown as green values. This also means that the chord will be strummed up.

Turning the main rotary counter-clockwise will show the same range of values (from 0 to 9), with the LED 16 additionally lit up, and indicating the negative value in that case. The message is that you are now strumming the chord down.

Note that in Nemo the strum configuration affects the note start values only. Also, the strum effect increases exponentially with the strum level chosen.

Step re-triggers

When we described chord composition earlier on we asked not to press the button of the base note. Time to discuss that in detail now.

A step chord is telling the step how many notes to play and at which pitch intervals. If you think of all the pitch intervals as being 0, you get the same note re-triggered. Combined with strum levels you can get very interesting note re-trigger effects.

Compose a chord containing 7 notes, for example, set a strum level of 9 and once you are done press the key of the base note in row 1.

You should see the LED next to the Chord button (column 2) light up orange, indicating that the chord is really a repeat. Press the base note button again to turn the repeat LED red, and once more to turn it off. The just described three states are defined as follows:

Off

The step will play according to the regular chord setting as described.

Orange

The step will re-trigger according to cardinality and strum setting for start, and only play a note OFF only for the last re-trigger note.

Red

Step will re-trigger according to cardinality and strum setting for start, and play note OFFs for every one of the played notes. This may render interesting effects.

Notes on Step re-triggers

The setting for step repeats may only be meaningful when used with appropriate cardinality and strum settings.

With some polyphonic sound sources and the orange repeat setting, you may get hanging notes, so try it out first before using this feature on stage. Also, toggling between states while the sequencer is running may generate hanging notes, since there may be scenarios where note off information may not be generated.

The reason is a given degree of flexibility for interpretation of the MIDI Protocol.

Musical scales

Nemo's note output may be associated with a particular musical scale. Once a scale is active, all notes are forced to play in that chosen scale.

Force to scale

Force to scale is enabled from Grid mode. Switch to Grid mode and simply press the green lit (default) Scale button. You will see its LED turn blinking orange and the machine switch to the scale select screen.

In row 1 all 12 scale notes will light up. By default C will light red and the rest will light green. This is to indicate that C is the base note of the scale and all other notes are in the scale as well - we are seeing the chromatic scale.

A scale is composed of at least one base note plus other notes that determine the interval signature of the scale. Next we will see how we can edit the base note and the signature to compose any musically meaningful scale.

Composing scales

Pivotal for the scale composition editing is the EDIT key. By default EDIT will blink green, showing that we are editing the "green" part of the scale, i.e. the notes and hence the scale's interval signature.

With the EDIT key blinking green, we may press any of the key notes in row 1 to toggle them into and out of our current scale.

Now press the EDIT key once and see it turn blinking red. Pressing now any note key will move the base note to the respective position, also moving the signature of the scale accordingly.

Preset scale signatures

Nemo provides 4 preset signatures for quick recall. The signatures are Pentatonic, Whole, Major and Minor. They are called using the mutator buttons 1-4 respectively.

For example, in order to get G Major, you would set EDIT to blinking red, press G and then the mutator in row 3.

Scale slots

Nemo provides 4 slots to store any scale you compose, as a means of quickly switching between scales if that is appropriate for your style.

Notice the selector column shows 3 green LEDs and an orange blinking one. These indicate the scale slots 1-4.

Switching between scale slots is simply done by pressing the appropriate selector button. Any scale that you program in a scale slot will remain there until you change it again.

As soon as you press another scale slot, the scale stored in that slot becomes active.

Locking the scale

Nemo's output is forced to scale as soon as you enter Scale mode. From Scale mode, apart from editing the scale there are two general options: exit and ignore the scale, or exit but lock the scale such that all output of the machine is forced to the scale.

To exit and ignore the scale setting press the ESC button. This will take you back to Grid mode and the Scale button will light green.

To lock the scale for all output press the Scale button once more. This will take you back to the Grid and the Scale LED will be lit red.

Exempting pages from the grid scale

By definition, once a scale is set and locked in the Grid, the output of all pages will be forced to that scale.

This may not be always beneficial. Think of pages containing drum related material - you would not want those pages to be affected by the scale. For this reason pages may be exempted from the force-to-scale mechanism.

Going to Page mode and looking at the Scale key, you will see that the Scale LED is lit up red. This indicates that the page will lock on to the scale as soon as a scale becomes active.

Press the Scale key to turn it green. In the green state the machine scale will not affect the page at all, hence exempting it from any scale related modification.

IX Advanced topics

The following describes topics and features that will put to your hands a great deal of power, leveraging some of the unique capabilities of Nemo.

Virtual MIDI channels

Nemo has the notion of virtual MIDI channels. They provide a mechanism to cross communicate data between tracks, Nemo-internally, equivalent to an external wiring from the MIDI out ports to the MIDI in ports.

Concept

Each real MIDI channel has a virtual counterpart. Whenever you route or set a track to play on a virtual MIDI channel OUT, the play data is sent to the corresponding real MIDI channel's IN.

For example, the output of a track set to virtual MIDI channel 8 on port 1 may be recorded by any track set to record on the real MIDI channel 8 of port 1.

Settings

To set a track to a virtual MIDI channel, you have to turn the MCH knob past channel 16 of port 2. You will notice that the display will switch from a steady light to a blinking light.

The numeric convention is identical to the one used for real MIDI channels: port 1 using green and port 2 using red dots.

Applications

This internal wiring opens up a wide range of capabilities. One of them could be the recording in tracks of CC messages generated by the sound control operations.

However, we are sure you will find others, especially in conjunction with the functionality related to interpreting signals coming via MIDI in.

Track attribute factors and flows

Simply put, track attribute factors for a track are parameters that determine how intense the step attribute offsets will play on that track.

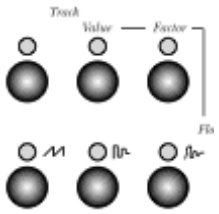
As an example, let's assume that within a track wed have a range of step offsets with a minimum of -50 and a maximum of 50. A neutral factor leaves the offsets unchanged. A factor of 0,5 compresses the range to -25 /+25, and a factor of 1,5 will extend the range to -75 /+ 75.

The main advantage we get from flows and factors is the factoring or scaling of step attribute effect on the play result. Using a scaling factor for each map of a track, we can determine to what degree step offsets apply to the play data. In fact, track LEN and STA themselves are really scaling factors for the corresponding attribute maps.

What is an attribute flow?

Glad you asked. Simply put, an attribute flow is the collection of offsets for a particular attribute and for an entire track.

Confusing? Let's look at an example: a VEL flow as a horizontal line means that all offset values are equal (and per default at 0). A linear ramp means that the velocity will increase in the course of the track.



Nemo provides a set of pre-defined flows that can be applied to any track attribute that has a factor. To see which ones they are, switch to Track mode and click on the Factor button in row 3. You will see that PIT, VEL, LEN, STA, AMT, GRV, and MCC light up.

Apart from setting the step offsets using flows, you are of course free to modify the individual step attributes in Step mode, as described in the section dealing with the Step mode.

Working with attribute factors

The attribute factor value for the attribute selected in row 2 is shown in row 1. For all attributes the factors have a range of 1 to 16.

The value may be modified using the main encoder, as we have seen it before in the case of track attribute values. Alternatively you may dial in a factor value directly using the keys in row 1.

MCC Stream resolution

MIDI CC flows have an additional specific property associated with them, and that is stream resolution. Per default, MIDI CC messages are sent on each step, according to the respective track and step

MCC values. In addition, intermediate CC messages may be sent between CC steps. This effectively increases resolution of the MCC stream, resulting in smoother controller flows.

When selecting the track MCC factor, row 4 lets you determine the resolution level, i.e the resolution for the current track may be selected via the four rightmost buttons of the fourth row. The default level is 1, with one CC message is sent per step. The levels 2, 3 and 4 mean that 3, 5, and 7 CC messages are sent per step.

The first message is always sent right on the step, the others are distributed evenly across the interval of time until the next step is triggered. The intermediate values automatically create a linear slope to the next value.

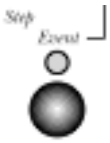
Step events

Steps may be used to generate so called events. Events are simply automated changes that happen at runtime. In general terms, an event is a programmed change of the attributes of a track and is attached to a step. All track attributes may be modulated by events.

The finer definition is however, that for the DIR, POS, and MCH events the track attribute value changes, while in the case of the other attributes, (VEL, PIT, LEN, STA, AMT, GRV, and MCC) what changes is really the attribute map factor.

Please refer to the section on attribute factors and flows for details.

Creating events



To create an event, double click on a step to zoom into it, and click on the Event button. The track attributes are now shown and selectable in row 2. Initially these are all lit green, waiting to be selected by a simple click. Once selected the event attribute will blink.

Set event values

The amount (AMT) value of the step determines the change in the track attribute every time the step is played.

In the case where the set amount is larger than the possible value range of the target, a modulo operation will be carried out to bring it into the range. Note that the changes can be positive or negative, according to the amount value.

Random event values

A non-zero value of the GRV attribute for the step generating an event will result in a random value between 0 and the value set in the amount (AMT) attribute.

Event range settings

Sometimes it makes sense to limit the range in which the event change occurs to a value below the size of its natural maximum.

To change the size of the interval used by events, press the Range button (located next to the Event button) and modify the value using the main encoder.

What you should notice is that the changes produced by the events will be bound between the base value of the track for that attribute

and the sum of the base and the interval size. The event is therefore always incremental.

Event execution

Another detail that may be of interest is that events will always execute exactly on the beat and not be influenced by the step's STA value to be pulled or pushed against the time line.

Clearing events

Events may be cleared from a track by zooming into the step, switching to the Event view, and pressing the flashing attribute button so it is solid green again.

AMT events

You may have noticed that while the AMT value of a step determines the effect an event has on its respective attribute, the AMT flow factor may be modified by events as well.

By creating AMT events, you are effectively able to have dynamic changes in the actual amount of change that is being applied to an attribute map factor, so we will be seeing changes to the change rate!

This is a powerful instrument to create evolving and to a large degree unpredictable sequences.

Step event offset reset

Finally, a step AMT of 0 (zero) will discard the offset that was produced by a step event.

The Effector

To be precise, EFF is not as much a function as it is a state switch, enabling the track to participate in cross modulation across the Page. As far as we know, the Effector feature is unique to genoQs machines' Octopus and Nemo, and the explanation below, whil originally tailored for Octopus, equally applies to Nemo, of course except for the part of operation which is device specific.

In each Nemo and Octopus page there is the notion of an Effector. In simple terms, the effector is a mechanism allowing tracks inside a page to modulate other tracks inside the same page.

Modulation here refers to projecting Step attribute offsets from one track to another at a time at which the modulator track is being played. Affected Step attributes are Step VEL, PIT, LEN and MCC.

The EFF mechanism

The modulation is always happening "top-down", i.e. upper tracks may modulate lower tracks, but not vice-versa.

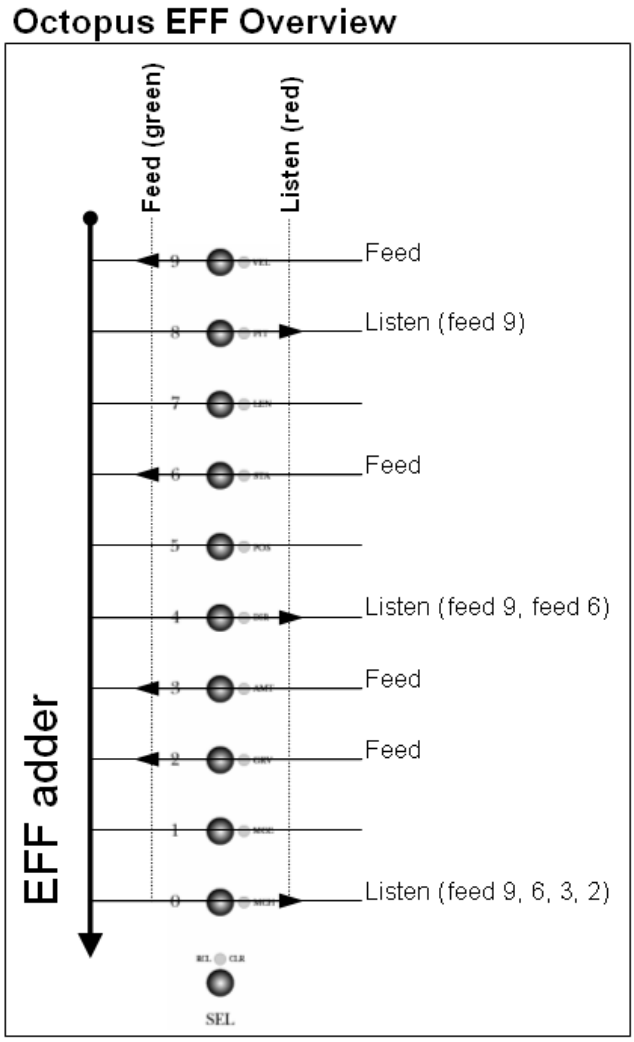
Here "upper" and "lower" refers to the respective track physical position. For example, on Octopus track 9 may modulate all other tracks but track 0 cannot modulate any other track. On Nemo, track 1 may modulate all tracks, but track 4 cannot modulate any other track.

Feeders, Listeners and Listening Feeders

Modulator tracks are called "feeders" and modulated tracks "listeners", for a better distinction of terms.

Because the effect of the feeder tracks is additive down the track indexes, you may picture the feeder tracks as feeding the effector and listener tracks listening to whatever is in the effector at their particular index slot.

A track may also be both a listeners and a feeder, which we call a listening feeder. This means that if that track itself is playing notes, then the attributes of those notes are modulated, while the resulting values will modulate the corresponding listeners below it.



Effector dry-run

In the Octopus example below, Track 9 is feeding its Step offsets for VEL, PIT and LEN into the effector.

This means that all listeners in the page may be modulated by those offsets. In this example we have set tracks 8, 4 and 0 as listeners, and therefore to be modulated by track 9's offsets.

Assuming that Track 9 is currently at a Step whose PIT offset is +3, and assuming no other feeders exist, the notes played in the tracks 8, 4, and 0 will be played 3 semitones higher than defined in those tracks for the current position.

But: track 6 is also a feeder, and modulates all listeners below it, i.e. Tracks 4 and 0. Assuming that the current Step in track 6 has a PIT offset of -1, listener tracks below will see a total PIT modulation effect of +3 -1 = +2.

Similarly, Tracks 3 and 2 are set as further feeders, which means that the last listener, Track 0, is being modulated by four feeders: Tracks 9, 6, 3, and 2.

Assuming Tracks 3 and 2 each have a Step PIT offset of -2, this means that the net PIT offset for row 0 is: +3 -1 -2 -2 = -2.

Remarks

The values fed into the effector are really the deltas between the actual step offset for a given attribute and the default value of that attribute. In the above example the default step offset was always 0.

The first remark here is that the offsets fed into the effector may obviously be both positive and negative.

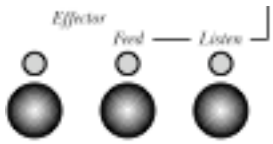
The second remark to make is that the attribute values fed into the effector by both feeders and listening feeders will be influenced by the factor set for that particular track.

Using EFF with events

The effector may be used in conjunction with using events to modulate the track attribute map factors.

We will not elaborate further on the possible results, and leave it as an exercise to the reader, but this does open quite new ways of cross modulation among the page tracks.

Playing the Effector



Feeders and Listeners

On to the operation of the Effector. Setting a track to be a feeder is done by zooming into that track and pressing the Feed button in the Effector area of track 3. One click will toggle its state to orange. To remove the Feed flag click the Feed button again.

It is important to note that a Feeder track need not contain any active Steps, i.e. need not play any notes in order to act as a modulator for other tracks.

In order to set a track to be a listener use the same procedure as for the Feed, except use the Listen button, right next to the Feed button.

Listening feeders

A listening feeder gets modulated first and then amplifies the incoming modulation with its own effector feed.

A track is a listening feeder as soon as both Feed and Listen switches are active in the Effector area.

Playing

For the Effector to work, it is merely the offsets of its Steps that count, and it is completely irrelevant whether those steps are generating MIDI notes or not.

However, if an effector feeder does contain active steps, these will be played regularly, as they would independent of the effector.

Muting

If a feeder track is muted, it will not have any effect on listener tracks. Toggling feeder tracks is a quick way to introduce changes to a track and then to go back to the original sound.

The Effector at work

Here is a brief example. Designate a feeder track. Set step 1 in the feeder track and pitch it up or down.

Now select a track with an index smaller than the effector feeder (essential) and build a pattern into it involving lots of (if not all) steps. Make sure that step 1 is part of the pattern and play the pattern.

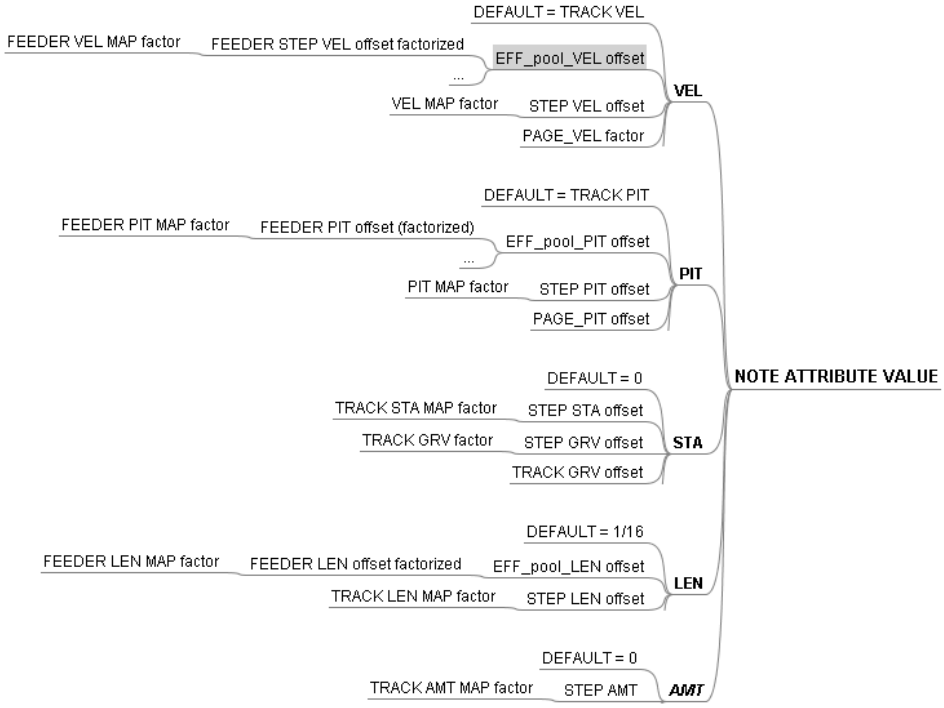
Now make this track a listener by activating its Listen flag.

You should now hear that the step in column 1 of the listening track is now played differently, with the PIT offset from the Feeder track applied to it.

The popular thing to do now is to start changing the track lengths for feeder and listener to get long-running modulation results.

Note attribute computation

In the following we would like to summarize the mechanism of note attribute computation. The model is depicted by the diagram below. Some explanation is necessary here on how to read the picture.



Velocity

Let's use the VEL attribute first as an example. The default note VEL value is the Track velocity. Per default this is 64.

Then, the track velocity is offset by the value generated by the effector. The effector offset in turn is generated by a step offset in the feeder track, factorized by its local VEL map factor. In the default case, where the effector does not apply, this offset is 0.

Next comes the offset generated by steps on our track. Their offsets may be anywhere between -127 and +127 but can be modified in turn by the VEL map factor of our current track.

Finally, the page VEL factor is applied to the value computed so far, generating the final velocity value that is output via MIDI. Note that this value is bound within the interval 0...127.

Pitch

The pitch value is computed in a very similar fashion to the computation of the velocity value.

The only difference is in the application of the page PIT offset, which is an actual numeric offset, as opposed to a factor in the case of velocity. The pitch value is also bound within the 0...127 interval.

Start

The note start value represents the trigger position of the note with respect to the “beat bar”, which would be a “0”.

The step start offset is first applied, and it is influenced in turn by the STA map factor in the respective track.

Further, the step GRV offset is applied, and this one is also influenced by the GRV map factor of the track.

Finally, the track GRV offset is applied to get the final start value of the note.

Length

The default length of a played note is 1/16th.

The length is influenced by the effector in ways similar to velocity and pitch: the effector contributes a length offset to the default, before the local step length offset is applied.

The local step length offset is in turn influenced by the track’s LEN map factor, which is the same and the track's LEN attribute.

With the length value computed, we now have all the information needed to play a note on a sound generator.

Amount

While AMT is not needed to play a note, it is mentioned here, since it is a key influencer, and may be influenced itself by its track AMT map factor.

X MIDI IN

Nemo is capable of both recording and reacting to MIDI IN data in a multitude of ways. This is yet another power tool in your hands. The following section digs into the details.

Note stream recording

Nemo is capable of recording incoming MIDI note, MIDI controller, pitch bend and channel pressure data onto its tracks, at runtime.

Note recording is polyphonic, meaning that chords may be recorded in from an external keyboard onto a track. Not only that, but you may also record on more than one track at a time.

Arm recording

To enable MIDI recording simply hold a Track SEL button and press REC to arm it for recording. Press Play to start the sequencer if it was not playing, and start MIDI recording. Use any external MIDI controller to record MIDI data on the selected track.

Note that the MIDI source to be recorded needs to send on the same MIDI channel as that of the destination track – i.e. the one you have just armed for recording.

Also, make sure to send the MIDI data into the correct MIDI IN port, i.e. the one that the track is set to send on (IN 1 or 2).

Recording chords

A track will stack the note data input such that you can make up chords by simply playing one note on top of another. Of course, you will need to be good on timing with this one. Playing chords directly on your keyboard will also generate a chord on the Nemo step under the chase-light, making it very easy.

When stacking notes up to make up a chord, you will notice that the length, velocity and start value of the step will use the values of the last played note for all notes in the chord.

Also, for chord recording the same restrictions apply as for building chords into steps – a chord cannot span more than three octaves and may not carry the same note in more than one octave.

Disable recording

To disable recording for the track in question, simply press the blinking REC button, or the red blinking selector of the track that is being recorded.

Reflection notes on MIDI recording

While MIDI recording is one of the most exciting and useful features in Nemo, some restrictions do apply, as we have seen already.

The MIDI recording capability of Nemo and Octopus, while extensive and clearly unmatched in hardware step sequencers, should not be considered as "what goes in necessarily has to come out" functionality, which you may experience on software packages for example.

The reason for this is quite simple: step sequencers underly a certain granularity constraint that is given by the number of steps in a track, which again give you advantages other sequencer paradigms do not. On Nemo, steps, while polyphonic, will force certain input into certain start positions which may sound different to your ears than what you have played in.

In other words, if you are looking to input material naturally, which you then work and interact with further inside the sequencer, you are spot on. If you are about to record your piano sonata as a MIDI stream for later identical replay, you may not be using the right tool. A simple software package for MIDI recording may be a better choice.

MIDI Controller stream recording

Generally, MIDI controller data is recorded as it is coming in, similar to a note stream. Arming and disabling tracks for recording works in exactly the same way.

Once you have set a track for recording, your controller movements will be recorded onto the recording track. Also, the description below applies equally to recording pitch bend and channel pressure data.

Auto-sensing

The track's MIDI CC parameters are auto-sensing the controller and the associated data and will perform the recording of the controller accordingly.

Considerations

Remember that a track may play only one controller at once.

Therefore, if you have created a controller flow for some controller and then operate some other controller while the track is still recording, the track will play the contained controller data for the last auto-sensed controller.

This includes pitch bend and channel pressure, which are handled by Nemo in a similar fashion to a controller.

Note that pitch bend data is recorded using two value bytes (as specified in the MIDI protocol), essentially with an available resolution of 14 bits. However, when editing the MCC data (as in Step mode MCC attribute) you will currently only operate on the most significant 7 bits of the value. This allows working with bender data to fit the model of working with MIDI CC data.

Step note recording

Nemo offers an alternative to note stream recording, and that what we term step-note recording. Note that this is not the same as step recording in other sequencers, therefore the slightly different name.

The idea is simple. You hold down a step, press a note on your keyboard (or whatever controller you're using), and voila! The step is entered. This only requires the page to be armed for recording. Simple!

Arming step-note record

With no track selected, in Page mode, press the REC key, and you should see it blink orange. You are now in step-note record mode.

Step-note recording

Holding a step on the matrix, and playing a key on your keyboard will assign the note data (including velocity) to the selected step.

To record more than just one step in a take, simply keep playing on your keyboard and you should see the played notes fill in one after another. They will default to length 1/16 and will simply follow the flow of the respective track.

Also note that the recording of MIDI data will follow the pattern described in the following.

Fresh recording

If you step-note record on a step that is turned off (i.e. you pressed it once on, then off again and did not release the button yet), the step will be freshly assigned the value of the incoming note.

Stacked recording

Step-note recording on a step that is turned on will stack the incoming pitch on top of the already existing data, letting you effectively create chords.

Chord recording

You may record chords directly, in the same manner as simple notes. You can record chords stacking on top of what's there already, or starting from scratch.

Track pitch assignment

Finally, if you don't hold a step key pressed but a track selector while in step-note record mode, you will dynamically and directly change the pitch assignment for that particular track.

You can observe the change in pitch assignment directly in the pitch circle, while holding the track selector pressed.

Advanced recording

There are some more details to recording that need special consideration. Some of them may have already come natural to you, so you may find them again documented below.

Chained track recording

At any time, only one track will be recorded into, and that will be the recording armed track of the current page.

In order to record takes that are longer than 16 steps, simply build a track chain and enable one of the chain tracks for recording. In that case it is best to have tracks play their own base, and not that of the chain head.

Recording re-take

If you absolutely do not like what you have recorded you can always use the CLR functionality, as we have seen it before.

Alternatively, while in PAGE mode, you may press the PLAY key to clear the track that is currently armed for recording.

Note that if the recording track is part of a chain, the content of all tracks in that chain will be cleared.

Quantized recording

In the section on attribute flows and factors, we have described the workings of the factoring mechanism. One application thereof is non-destructive quantization of track content, including recorded material as you record it during a live session.

In order to get quantized output, you may want to set the STA factor for the track to the lowest possible value, case in which the STA map is not in effect, and all noted play on the beat.

Note that you may always increase the factor for the STA map in order to gradually increase the amount by which steps are pulled or delayed during play.

Controller map learning

While somewhat unrelated to what we have discussed so far, another aspect of MIDI recording is the ability to have a Sound Control map learn from the MIDI input.

Enter Sound Control edit mode

Enter the Sound Control edit mode by going to Page mode, disabling any recording mode if necessary, and double click on one of the Sound Control selectors (A, B, C, D).

Sound Control learning

While in Sound Control edit mode, press the REC key to arm the learn mode. As soon as you press the REC key you will see the REC LED blink red.

At the same time you will see a red blinking LED (by default 1) in the selector column, denoting the learning controller.

Pressing across the selector buttons will move the position of the red light, and effectively select the encoder for which we want to make the assignment.

Per default you will see the amounts of the map displayed, and this is the most spectacular place to be: if you are turning knobs on an external controller you will see the amounts of the learning encoder go up and down immediately.

However, note that the MIDI channel and the controller number are recorded as well using the auto-sensing mechanism we have seen earlier when recording CC to tracks.

Disable Sound Control learning

Simply press the REC key again to exit the CC map learning mode, and switch the view of the CC map accordingly, to verify your results.

External force-to-scale

Forcing MIDI notes to the Nemo scale

While in Page and Grid mode, with the REC armed, your external MIDI input will be forced to the scale of the current page.

This is especially interesting in performance situations, obviously.

MIDI merge

By selecting a chromatic scale for your page you can effectively implement a MIDI merger functionality.

Note that this is only applying to note data, and not to other MIDI data, such as controllers.

XI General tools

The following section presents the more infrastructure oriented features and functions.

Utility functions

Chase-light align

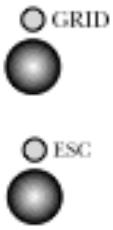
There are many reasons why your chase-light in a page may become misaligned in a visual sense. Sometimes that's what you want, but sometimes not.

In order to line up all tracks in a page, simply press the Align button.

This will re-synchronize all tracks to the Nemo global master-clock, as explained in the section on the Grid mode.

As a side comment, the chase-light will also be realigned whenever you Stop and then play a sequence. Pause and Resume (pressing pause again) will not realign the chase-light

Interface locking



Sometimes you may want to hide the Nemo from preying eyes or even unauthorized button pressers.

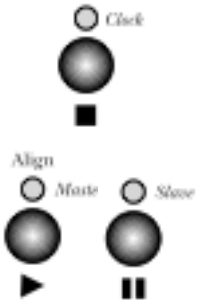
At any time, regardless of the playing status of the machine, you can engage the interface lock by holding GRID and pressing ESC at the same time.

The result will be that the interface will go blank. All LEDs will be turned off, and seemingly all keys will be disabled. The sequencer will keep playing and the only operating knob will be the tempo knob.

In order to unlock the machine you may double click on the GRID mode button to return to normal operation in Grid mode.

MIDI clock synchronization

MIDI clock selection



Per default, Nemo does not send or react to MIDI Clock information. However, Nemo may act as a MIDI clock master in your setup, or will slave to some other source.

The central switch of the clock behavior (master, slave, or agnostic), is the Stop button in the transport bar, also labeled “Clock”. Holding it down will show the two options Master and Slave as selectable, i.e. green. Once a state is selected, the appropriate LED will turn orange.

Master

To set Nemo as clock master, hold down the Clock (Stop) button, and click on Master (Play).

Slave

To configure Nemo as MIDI clock slave, you hold pressed the Clock (Stop) button and press Slave (Pause).

When Nemo is running in slave mode, you may notice that the timing resolution is reduced compared to master or default operation. This is due to Octopus internal resolution being higher than what the MIDI clock protocol can support.

MIDI port considerations

When Nemo is MIDI clock master, MIDI Clock signal will be sent out of both MIDI ports. Receiving MIDI clock will only work on a single port at a given time.

The MIDI port receiving MIDI Clock will be automatically detected and requires no explicit selection by the user. Once a port has been determined, MIDI clocks arriving on the other port will be ignored.

The MIDI clock state is remembered as part of the machine state, when the machine state is saved. See the “Instrument State Save” section on saving the Nemo state.

ALL NOTES OFF message

When the sequencer is not running but is defined as MIDI master or slave clicking the Stop button will send out an ALL NOTES OFF message (controller 123) on each of the 32 MIDI channels.

Saving the instrument state

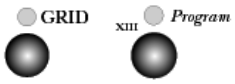
Nemo can save its full state for later recall – all settings are stored to FLASH memory and automatically recalled upon power-on.

Note that only one state may be saved to FLASH, replacing any previously saved machine state. Also note that in order to perform this operation the sequencer has to be stopped.

WARNING:

Please make sure that Nemo is not turned off or reset during the save operation!

Saving the machine state



To perform a save of the machine state go to Grid mode and press and hold the GRID button. While you hold down the GRID key, the Program LED will start to flash red.

Pressing the Program key will start the save operation. Expect the save operation to take about 5-10 seconds.

Save progress

The progress of the save operation is depicted in row 1, and operation completion is signaled by a complete line.

NOTE: If a save operation does not complete, for whatever reason, the saved memory contents will be irreversibly lost and the previously saved instrument state will likely become corrupted as well.

Things to remember

You can always revert back to the last saved state by simply triggering a reset reset using the key combination Stop+ESC. This will clear all changes made since the last save operation.

If you power up Nemo while holding the “Clear” button pressed, you will start without loading the saved state from memory, starting off with a virtually fresh machine.

To completely clear the Nemo RAM memory back to the factory default, go into Grid mode, press and hold GRID, and then press the Clear Mutator button. This does not affect the machine state saved in FLASH memory in any way.

Exporting memory content to MIDI

Nemo may export content of its memory by the means of MIDI system exclusive (SYSEX) dumps.

This is particularly useful when you would like to archive data on a computer, or even share memory content across Nemo machines. Note however that there is currently no compatibility of SYSEX dumps across OS versions. However, the high demand for this feature ensures it a top priority in further development.

Before you continue, please make sure that the sequencer is stopped. Connect the MIDI Out 1 port of your Nemo with your receiving device, considering that SYSEX data will be export out of the Nemo port 1 only.

Export content mode

Three types of SYSEX export streams are available: PAGE, BANK and GRID. In order to trigger the export operation (SYSEX dump operation), you need to be in the SYSEX dump mode on Nemo.

To enter the SYSEX dump mode, press and hold GRID while pressing the green blinking Align button. You should see the Align LED turn orange and blink steadily. To exit the SYSEX dump mode you may press ESC and return to Grid mode.

Page exports

A PAGE export will output the full contents of a page as MIDI SYSEX stream. To trigger a page save, simply press the button of the page that you would like to export. Only lit matrix buttons will have an effect, preventing you from dumping data of unused pages.

Notice that the Export Content LED will stop blinking for the duration of the data transfer. A single exported page should take on the order of 15 KB.

Page imports

When played back to Nemo, a previously exported page will be reloaded into its original and natural location in the grid, i.e. the position it was in at the time of its export. This means also that it will overwrite any content in that location.

Note that playback of SYSEX content to Nemo may occur at any time, including while the sequencer is running.

Once the page is received, the machine will switch to GRID mode and the page data is pasted from the incoming SYSEX buffer into the page memory. This operation is equivalent to a page copy that takes place as soon as the full page data set has been successfully received.

Bank exports

A BANK export will export all non-empty pages in a bank, and behaves very similarly to exporting page content, basically chaining several page export operations.

To trigger a bank export, simply press the button of the bank you would like to export, in the SEL column.

The duration of a bank export is dependent on the number of pages that will be exported.

Grid exports

The GRID export is covering all the data that is not page related, but has an influence on the overall machine behavior. This includes parameters like strum levels for example.

To initiate a grid export, simply press the green lit MIX button on the bottom left side of the front panel.

The exported GRID content will take on the order of 16K.

All pages and full machine state export

Two more options are available for SYSEX dump: dump all pages at once via the SEL key, and dump the full machine state at once via the EDIT key.

The same results may be achieved by several partial dumps as described above.

You may want to experiment a bit to find the rate that is best suited for your particular setup.

Remarks

Note that you can use the export functionality only while the sequencer is stopped. This is a measure to ensure concurrent data integrity of the SYSEX dump and timing stability of the material played.

You may however, receive SYSEX data while the sequencer is playing. This makes it particularly convenient to substitute memory content on the fly, during performance.

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