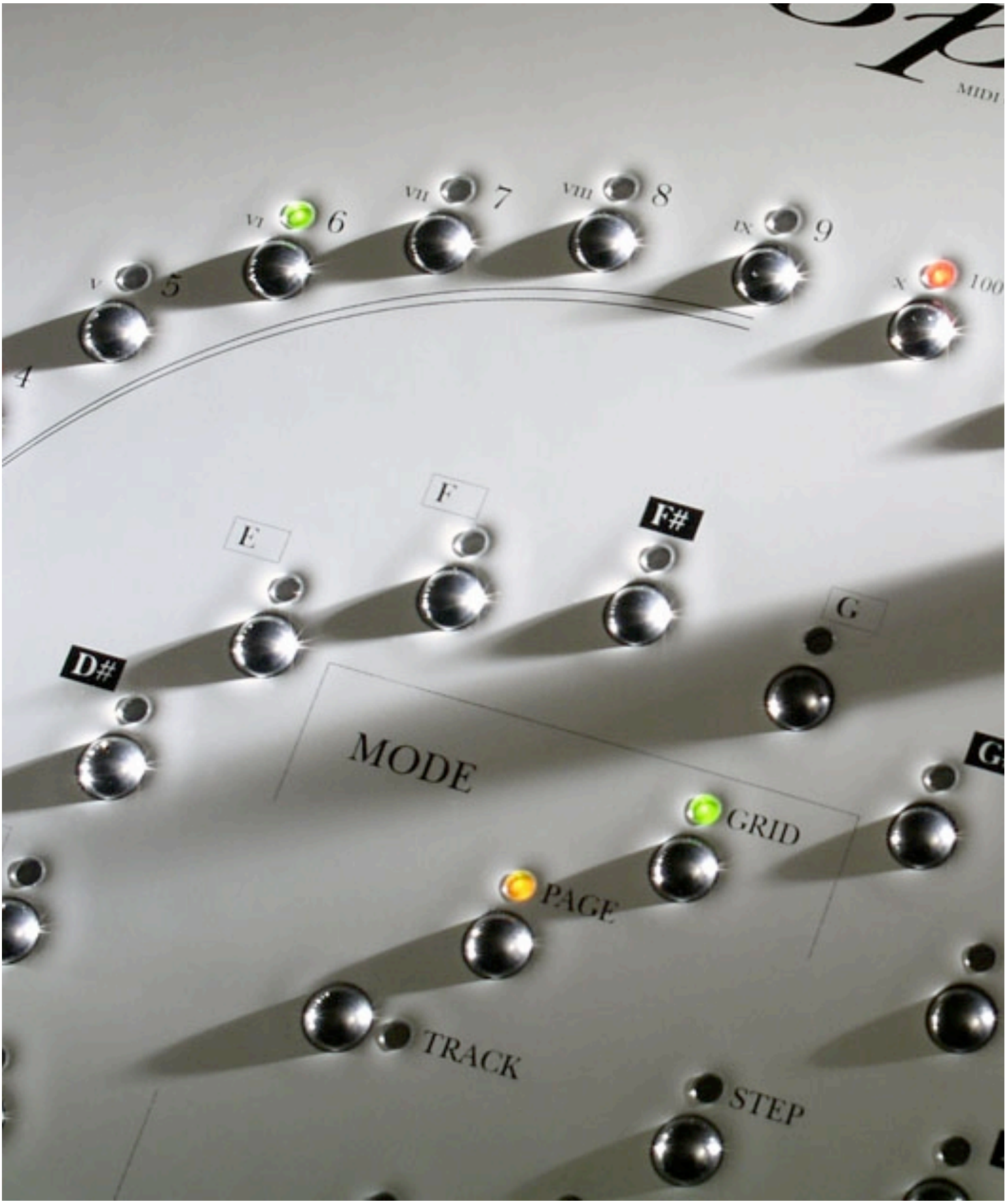


genoQs Machines

octopus

MIDI Control Sequencer

Introduction

Welcome, and sincere congratulations to the purchase of your new sequencer – a genuine genoQs Machines Octopus!

You now own one of the definitely finest MIDI instruments ever built. We proudly put in your hands a device built to drive your creativity and provide you joy for years to come.

Octopus is conceived as a living instrument with long-lasting value, to help you search and un-cover new sonic territory, rewarding you with an unequalled haptics experience.

We invite you to explore the capabilities of Octopus 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 Octopus is able to provide. Don't get intimidated! You will soon discover fast ways of operation that 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 Octopus is about – at every stage and no matter what - you are encouraged to experiment, explore and push the boundaries!

Please check our web site for the latest software and documentation at www.genoqs.net

***genoQs Machines** - April 2007, Stuttgart, Germany*

TABLE OF CONTENTS

I OVERVIEW

GENERAL CONCEPTS

This section provides an introduction to the concepts at the base of Octopus.

We advise the impatient reader skipping this to come back to this section once confusion sets in and nothing makes sense anymore.

THE OCTOPUS WORLD

In brief, the Octopus world consists of entities or objects, attributes that are associated with them, and functions that modify those objects or their attributes.

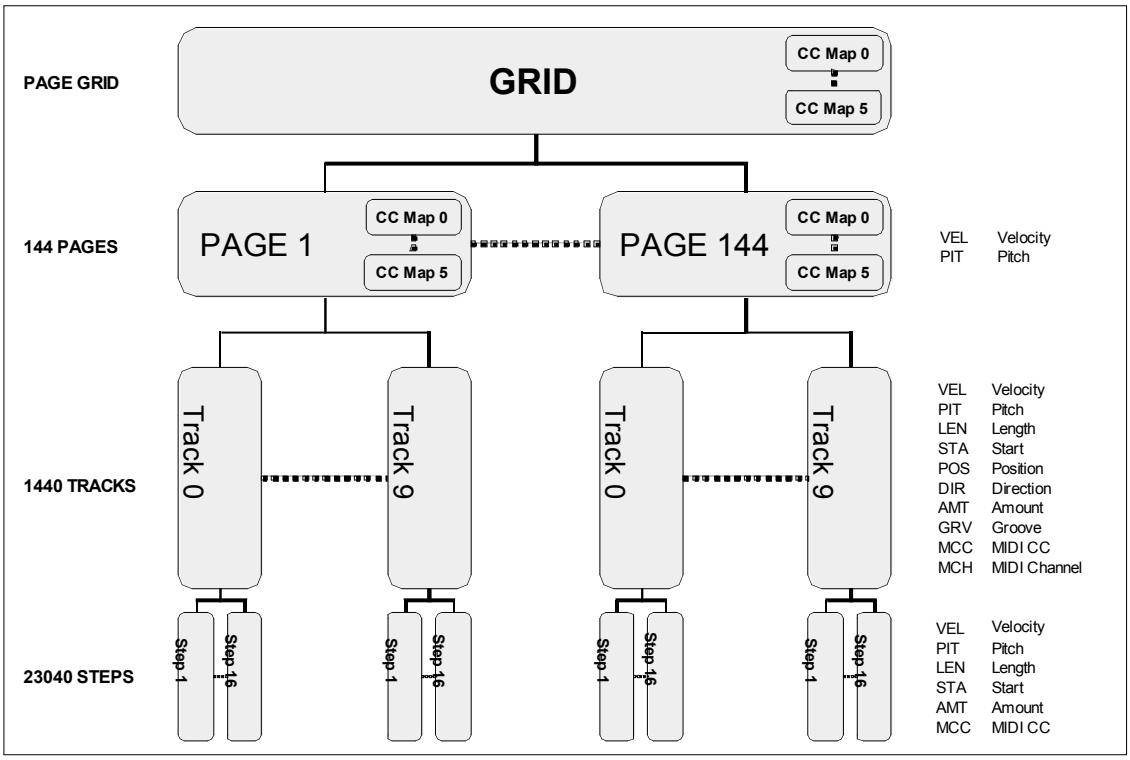
The ultimate idea is to allow modifications of the objects in the most flexible manner and in real time, which is done using a subjectively intuitive control model and the comprehensive Octopus user interface.

OCTOPUS OBJECT MODEL

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

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

Octopus hierarchy of objects and related attributes



NAVIGATION BASICS

The Grid contains all Page objects and any Page is made up of Tracks and Steps.

As we will also see later, moving around this hierarchy tree is trivial: to jump between leaves you can always go up a level and down again. However, in most cases direct paths are also provided, allowing you to jump directly from one leaf to another.

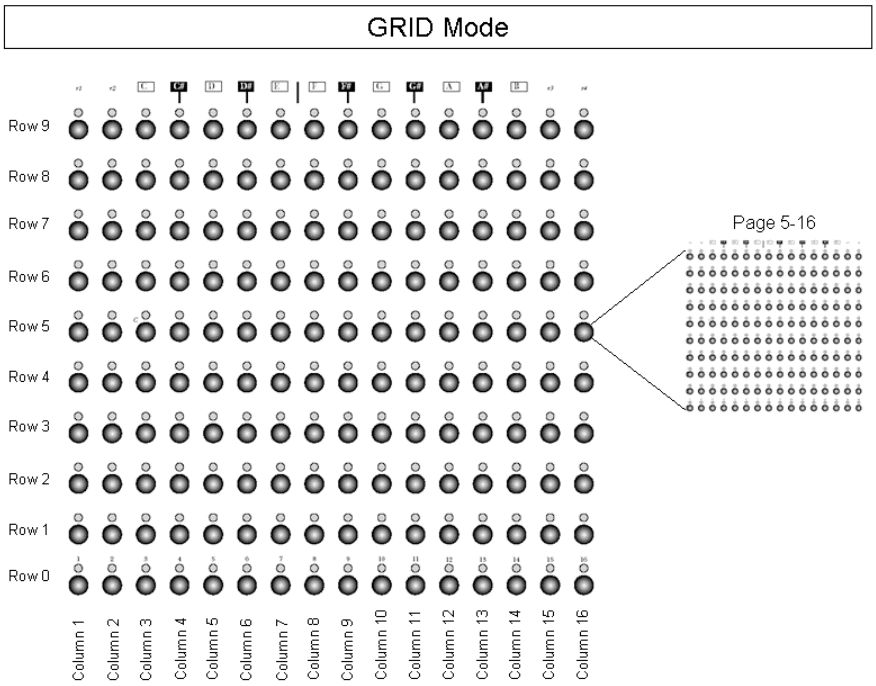
MOVING AROUND

Just as an example, assuming you are in the GRID mode, you would hold the PAGE button and select the page you would like to jump into, by pressing its button. Or you would double-click on the corresponding page button.

You would do the same to get further down into a specific track and from there into a specific step. You may also choose to go from a page into a step directly, as we will see later.

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 TRACK and the selector corresponding to the track you would like to jump to. This works in MAP mode as well. In Step mode, press and hold STEP and press a grid button to jump to the step corresponding to the pressed button.



THE GRID

Octopus provides a total of 144 pages grouped in 9 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. This accounts for 9 rows (row 1-9), with row 0 serving as a grid set selector.

Each bank can be activated for current play by selecting one of its (non-empty) pages. This means that up to 9 pages may be played concurrently.

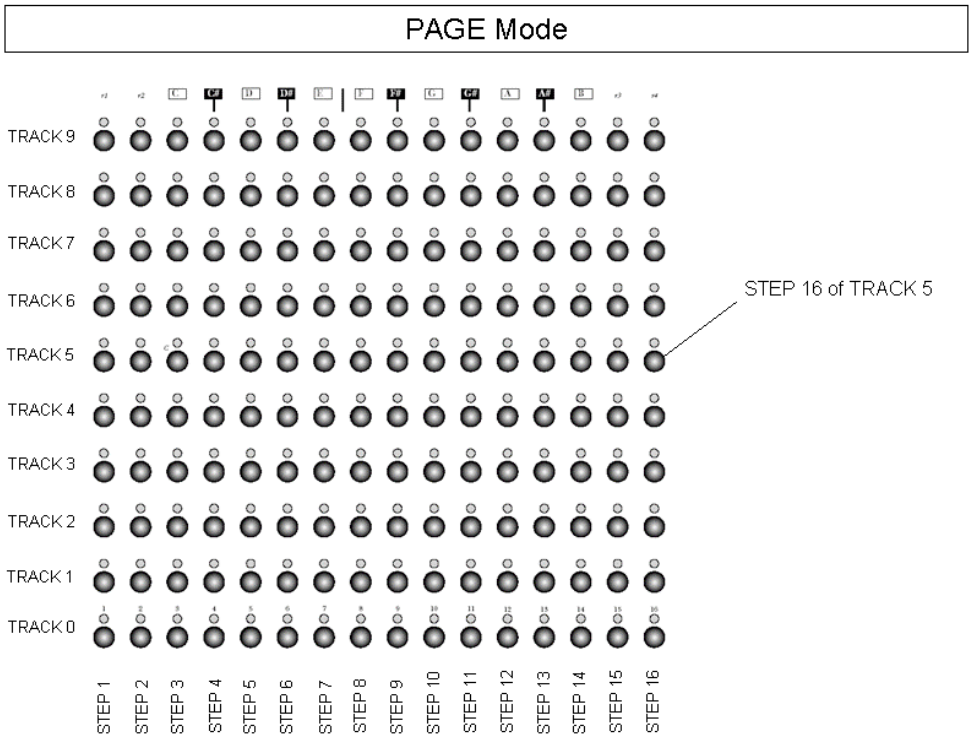
Depending on the number of tracks and the density of the data, it is possible to overload the MIDI stream. A more complete discussion of various system and MIDI loading is found in the section on System Load Handling. See the picture above for a better understanding of the Matrix in the Grid mode.

MIDI CONTINUOUS CONTROLLER (CC) MAPS

The CC Maps are simply assignments of CC functionality to the Mixer knobs of Octopus. You can use CC Maps to freely assign MIDI Controllers and their appropriate channels to the Mixer knobs, independently of what is going on in the PAGE.

PAGES

One can think of Octopus' pages as track containers. The number of tracks in a page is 10, with a default length of 16 steps each. See picture.



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

At a glance, the preset chain modes available are: 10 tracks of 1 row each (default), 5 tracks of 2 rows each, 2 tracks of 4 rows each + a track of 2 rows, and 1 track made up of 8 rows + a track of 2 rows.

However, the user is also free to build any other track chain configuration, as desired.

This combined with the ability to play up to 9 pages concurrently and each of the 9 pages being part of a cluster of at most 16 consecutive pages gives you a lot of room for both composition and live play.

TRACKS

If pages are Octopus' 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 Octopus 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, and others.

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 Octopus have attributes associated with them. The range includes but is not limited to Velocity, Pitch, Length, Start, Position, and others.

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

Generally, 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.

ATTRIBUTE MAPS

The attribute maps are basically views associated with TRACK objects which will allow you to view and edit directly the values of all steps in a track, for a specific attribute.

For example, the velocity map of a track will show you at a glance all step velocities, allowing you to change them directly by the press of a button.

THE FRONT PANEL

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

MIX ENCODERS

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

SEL BUTTONS

Each row has a dedicated button in the SEL (Selector) group.

MATRIX

The MATRIX refers to the field of 16x10 buttons.

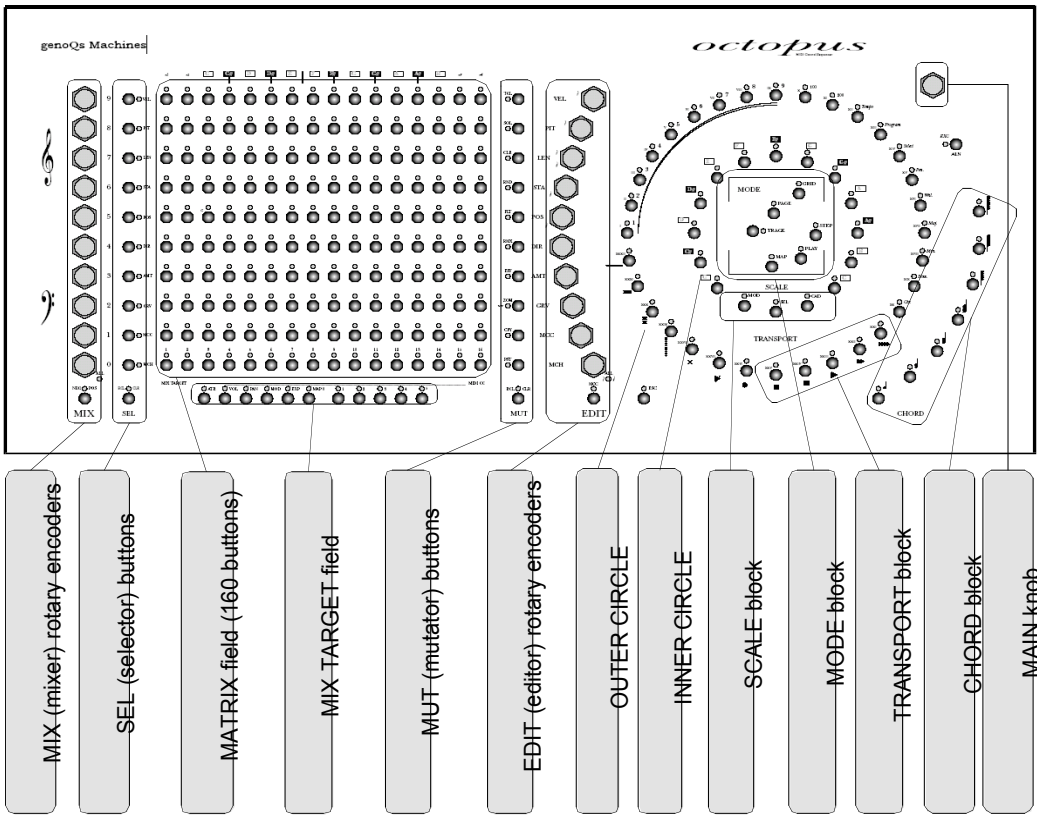
The buttons take on various functions, depending on the operating mode of the sequencer. The most obvious one is probably, when matrix rows represent tracks of 16 steps each.

Right below the matrix is the MIX TARGET field which determines the functionality of the MIX rotary knobs.

MUT BUTTONS

Each row has a dedicated button in the MUT (Mutator) group.

Octopus front panel



EDIT ENCODERS

Each row has a dedicated right rotary encoder – in the EDIT (Editor) group.

CIRCLE

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

Among other controls, the circle includes the SCALE, MODE, TRANSPORT, and CHORD fields and the MAIN knob.

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

NOTE:

First and foremost we are asking that you familiarize yourself with the front panel layout, so we can refer to buttons and LEDs as we go along. The miniature picture provided should be enough as an orientation, since you have the real thing in front of you.

ADDITIONAL CONTROLS

Beside the front panel controls there are two other important buttons:

The power-on button is located next to the power plug on the back side of the unit. No further explanation necessary.

The reset button is located under the main Octopus panel just under the Main knob. The red reset button does what the name suggests – it will simply reboot your machine, by default resetting it to the last saved state.

II START-UP

CONNECT AND POWER-ON

Start simply by connecting just one sound source to the MIDI OUT 1 port and then use the provided power cord to connect Octopus to a power outlet.

POWER SUPPLY

Octopus has an auto-sensing 110-240 Volt (50-60Hz) power supply so you can safely power it up in any country without extra adapters or converters. All you need is a cable that fits your power outlet, and that should have come with your machine already.

SOUND SOURCE

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.

USB LAMP

If you have connected a USB lamp in the port labelled "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 labelled PAGE should be blinking orange.

Congratulations – you are now ready to engage on a long and rewarding journey with your new sequencer!

START

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

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

START-UP DEFAULTS

The defaults include having the master tempo at 120bpm, 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. Octopus 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: the procedure is to

press and hold the GRID mode button, while pressing the CLR button.

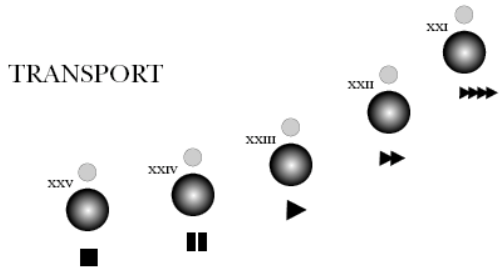
Again, this only clears the RAM (volatile) memory contents and leaves the content of the FLASH (non-volatile) memory untouched.

BYPASSING STATE RELOAD

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

GENERAL CONTROLS

Octopus 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.



PLAY

Press any of the play buttons in the transport section as depicted. It makes no difference which one you press as long as they show an arrow in their label. The difference between them will appear later, so please bear with us for a moment.

You should now see the 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 labelled.

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 labelled.

The pause button freezes the chase light at the current step.

To continue from pause (to un-pause) 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.

Simply turn the MAIN rotary encoder in the top right corner – clockwise (increase) or counter-clockwise (decrease).

INTERFACE CONVENTIONS

NUMBER DISPLAY CONVENTION

Two other things to notice here: the LED of the button labelled Tempo is orange – this indicates that the encoder is regulating the tempo.

As you turn the knob, you will see funny things happen to the lights of the top left quadrant of the outer circle. This part of the panel is used to indicate the current master tempo and display its value. Do what?

Yes – the red dots have to be understood as multiple of tens, the green dot represents the value of ones in the number on display. Plus there is another red light potentially lighting up, labelled 100. That adds 100 to the number.

For example, 143 would be represented by the LEDs 100, 1, 2 and 4 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.

CLICK CONVENTION

While we are here, we can introduce another convention: the click convention.

You can directly select a value by pressing the buttons in the tempo area. Double click on a number to set the ten's (red) value and single click to set the one's (green) value.

For example double click on 7 and single click on 2 to set a tempo of 72. Note that by just double clicking on a number, the ones value is set to zero.

This makes it very quick and easy to select round values like 60, 80, or 120. Selecting non-round values is just one more click away.

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

BASIC STEP OPERATION

STEP TOGGLE

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

For now it is enough to know that in this mode every row in the matrix represents a track, and every button represents a note or a step. This is no different as you would probably expect anyways, knowing that Octopus is a chase-light pattern sequencer. Let's press some buttons now.

Press any of the matrix buttons, and you will see the steps go on, 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 as we have seen before is sure fine – another thing you may want to do though, is skipping steps entirely. Skipping a step 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 (shown) while you press the button of 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.

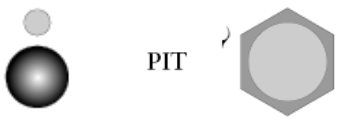
To un-skip a step and make it plays again in the regular fashion, just press it by itself and you should see its light go off. Press it a second time - as long as you don't hold the MUT button pressed, you will see it toggle on as an active step.

STEP TWEAKING

Use what you have learned so far to compose a pattern in one of the tracks.

Start the sequencer and you will hear the pattern played, boring as it is, since all steps are set to a default level.

Let's change that, but tweaking some Step attributes. We will use PIT here as an example.



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 4 and 5.

Press a step in row 4 and at the same time a step in row 5 – and make sure you do not release the buttons yet.

Now toggle steps in row 4 – and you will see that the steps in the same column of row 5 will be toggled as well. We call this behaviour "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 Octopus panel you see a block called SEL, to the right of the MIX rotary encoder block. These are the Selector buttons.

SEL

Symmetrically to the right you see another block called MUT, to the left of the EDIT rotary encoder block. These are the Mutator buttons.

MUT

For now we will use the selector button corresponding to our track to "grab" it, and do something – in this case copy it.

TRACK COPY

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*.

TRACK PASTE

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.

** NOTE: 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.*

TRACK MUTE

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, and simply press its mutator on the right and see what happens: the first press will colour the mutator red and the track will not be heard. Done, the track is muted, simple as that.

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

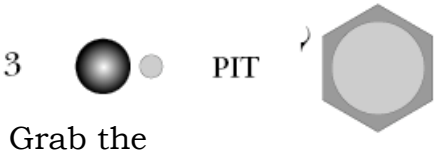
MUTE RECALL

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.

TRACK TRANSPOSE

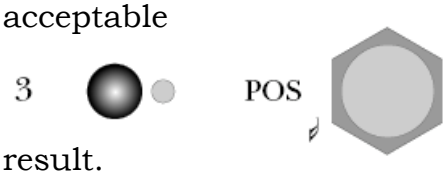
Remember, we wanted to experiment a bit with a track – let's transpose it. By now you probably know how this works anyway.



Grab the track, turn the PIT knob clockwise, and hear how the track is being transposed up. Shown above is how you would transpose track 3.

TRACK SHIFT

Now un-mute both tracks – you should hear them play at the same time, on different pitches. You may want to tune them as you learned until you get an acceptable



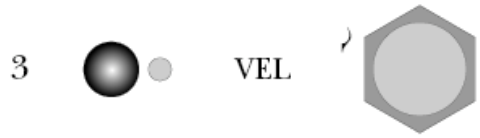
result.

Now grab one of the tracks, and turn the POS knob. This shifts the track forward or backward, depending on your turning direction.

TRACK VELOCITY

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...

TRACK PAUSE

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.

TRACK RETRIGGER

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

To retrigger a track simply hold it selected in PAGE mode and press the ALN key.

The track will retrigger immediately and will not be aligned to the master clock. To do a full realignment press ALN 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 – thankyouverymuch.

Now use the copy and paste functionality to get the "original" pattern on row 9 and the altered pattern on row 8.

Clear everything else.
How to do that? Grab the track to be cleared and press the CLR mutator and the track will clear.

Alternatively, just for this exercise you may simply mute it, too. Use whatever method you prefer.

So now you should only have two non-empty tracks with no other steps set in the page.

For now take a look at the section of the front panel we refer to as the chain selector. You will see that the bottom LED is lit orange, all others are off.

CHAIN-MODE SELECTION

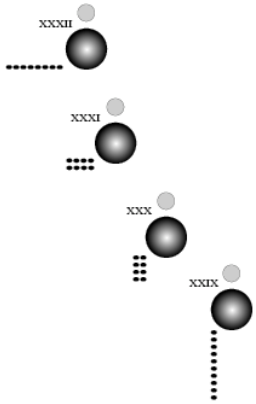
Press now the button labelled XXX. The corresponding LED will light orange indicating that this chain mode is selected.

If the sequencer is already running you notice immediately what this means – if the sequencer is not running, you may want to start it now.

PRESET CHAIN MODES

Basically in this new chain mode you now have pairs of tracks playing sequentially. In our example, you will now first hear Track 9 play, then Track 8. The other tracks will follow this pattern.

Try the other chain options as well – sets of four tracks being played (XXXI) and one long chain of eight tracks being played (XXXII) – for a total of 128 steps in your current page.



USER-DEFINED CHAINING

Finally, you may create any chained track configuration that you like.

For example, you can chain the top 4 tracks to build a structure of a total of 64 steps, while

leaving the other tracks at a length of 16 steps each.

The way to accomplish this is to select the tracks you want to chain and then use the XXVIII button to chain them. We will dig into this a bit deeper as we move along.

UNDER THE HOOD

For now, take some time to experiment some more, for example change pitch or direction of the tracks.

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, if you are looking to build a 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 would like and you will see that the steps under the chase-light get set 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

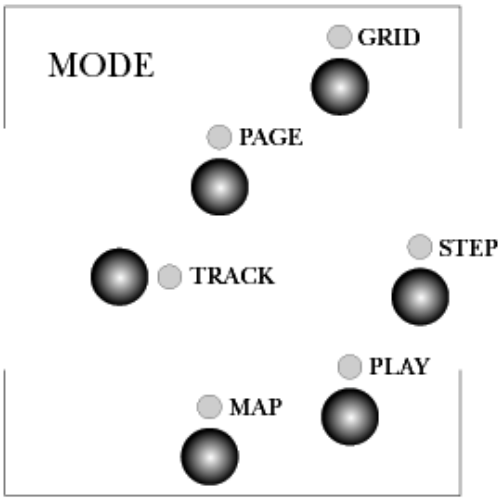
Sometimes you may want to quantize the entered data. A quick way to do so is available as well, but we would have to jump way ahead of the flow.

If you really want to know, and can't wait, just remember for later that all it takes is to clear the STA map of the track in question.

Or, you may want to set the STA attribute map factor to the lowest possible value, where it will not have any effect on played output and therefore play everything „on the beat".

THE MODE BLOCK

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 as well, most of which denote Objects. Their use goes back to the object model hierarchy discussed in the introduction.

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 Octopus 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.

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 an orange LED blink indicating the mode that you are currently in. This is a key navigational landmark, always telling you where you are.

One slight exception to that rule is the 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.

III STEP MODE

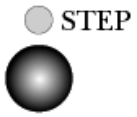
BASIC OPERATION

WHY STEP MODE?

Let's assume now that you are looking for a very particular note you want to trigger – for example a sample mapped to some MIDI note. You would have to assign it to a particular step. How to do that fast?

For this and many other purposes there is a simple way to look at a step's parameters. That is where the STEP mode comes into the picture.

ZOOMING IN



Double-click the step under investigation, or any step for that matter – you should now see the display in the MODE field switch into the STEP mode, indicated by the blinking STEP mode LED. It is helpful to think of this as a zoom into the step you double clicked on.

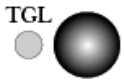
Some explanation is needed for what you now see being displayed. The various rows indicate the values currently set for the step attributes.

FINDING YOUR POSITION

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

This blinking LED indicates the position of 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.

GAINING CONTROL



You may use the TGL key to toggle its status as you like.

As you toggle the step status you see that another LED changes colour as well – the LED in row 5 (POS) is on when the step is turned on, and off otherwise. The reason is that the POS row is always showing the pattern of the track to which the zoomed step belongs.

MOVING ON

Holding the Step Mode button and pressing any key in the matrix selects the corresponding step into the zoom focus and adapts the display of the POS row according to the track's contents.

Alternatively, if you want to edit a step in the same track, you may press its corresponding button in the POS 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

Going over the front panel from left to right, you see all LEDs lit up in the SEL column.
Bear with us for a moment; we will explain in a second what this is about.

STEP VELOCITY (VEL)

The contents of the VEL row may look familiar – a number is represented here, with the red LEDs counting the tens and the green LED pointing to the ones value. This value may be changed in a more conventional fashion by simply turning the VEL knob.

The step

velocity offset may be a positive or negative number. Negative offsets are indicated by flashing red and green LEDs.

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.

STEP PITCH (PIT)

As you may expect, the PIT row shows the pitch value for the step.

The number displayed is really an offset that the step applies to the track pitch. The combined pitch of the track and the step is shown in a musical fashion in the inner circle.

Turning the PIT knob will now cause the obvious – it will change the pitch for the step, which you will hear once the step is played.

Just as for velocity, step pitch may be a positive or negative offset relative to the base track pitch. Negative pitch offsets are indicated by a blinking value display in the pitch row.

STEP LENGTH (LEN)

The same principles 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 15 after which the red value will be incremented. Each green increment corresponds to 1/192

of a note and each red value corresponds to 1/16 of a note. For technical reasons the max note value is one full note – 192/192. Incrementing 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.

STEP START (STA)

This row denotes the start of a step. 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 line 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.

STEP MIDI 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 several LEDs lit up. They are labelled according to the mutator functions that they trigger. A lit up mutator indicates that it is available. Below a quick description of what they do:

STEP TOGGLE (TGL)

Press the TGL mutator to turn the selected step on and off.

STEP CLEAR (CLR)

Pressing this 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. The default Step attribute values are:

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

STEP RANDOMIZE (RND)

This will assign all step attributes random values. The randomization takes place based on the actual Step value and using 50 as randomization amount.

STEP (UN-) ZOOM (ZOM)

In STEP mode the LED is lit up in red. Pressing the ZOM key will exit the STEP mode and return you back into the PAGE mode.

STEP COPY / PASTE

A selected step may be copied using the CPY mutator. To paste it to a different position, you may select the step at the target position and use the PST mutator for the paste operation.

EXITING STEP MODE

We encourage you to play and experiment with what you have learnt and seen so far. 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 are supposed to 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 step after step.

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

Do this by pressing the SEL key and keeping 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 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, anything you would like, by simply turning the 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, simply 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.

STEP SELECTION MUTATORS

When a step selection is active you will notice that some mutators become active – indicated by their lit up LEDs. The set may be different depending on whether you have one or more steps in the selection.

SINGLE STEP SELECTION

If a single step is selected using the SEL button, you may notice that the circles are showing the step's velocity and pitch values. This is useful as a reference when you edit the steps velocity and pitch.

IV TRACK MODE

BASIC OPERATION

WHY TRACK MODE?

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

Please note that all the functionality described in the TRACK mode is also reachable from the PAGE mode, as long as a track is selected. The difference is that TRACK mode provides the finer visual feedback necessary for some of the edit features.

ZOOMING IN

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

In our example, by double clicking selector number 5 we would zoom into Track number 5. 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 5.

TRACK ATTRIBUTES

TRACK VELOCITY (VEL) AND PITCH (PIT)

Velocity and Pitch values are displayed in the same manner we have seen in STEP mode. The meaning of the values is interesting – they represent the base value and are to be seen in the context of the values pertaining to the steps in the particular track.

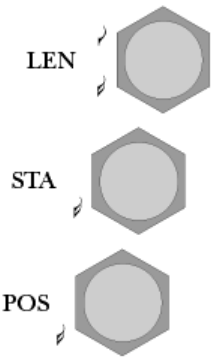
UNDER THE HOOD

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. Octopus uses the convention that middle C (MIDI note #60 decimal) maps to c5.

TRACK LEN AND STA FACTORS

The Length and Start rows show visually the values for the length and start factors of a track. The STA and LEN factors are simply multipliers that are always applied to the STA and LEN maps of that particular track.

This means, that a high factor value will result in the effect of the STA or LEN map being amplified, while a low factor value will result in the effect of the map 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 maps 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.

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

TRACK POSITION (POS)

The POS line will show the pattern of set steps in the track at hand.

Turning the POS knob will shift the steps around, depending on the turn direction, modifying the contents of the play window, just to use the same terms.

TRACK DIRECTION (DIR)

This line 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 play, 1/3 probability reverse play

6-16 – Same as 1, however: the track play directions 6-16 may also be individually edited and changed as needed.

For details on user-defined directions please refer to the dedicated section in this manual.

TRACK AMOUNT (AMT)

The next parameter to talk about is AMT – representing the amount of randomization applied to the track when the RND function is called.

TRACK GROOVE (GRV)

The GRV amount shows 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 CONTROLLER (MCC)

The MCC row 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 would indicate a valid controller value.

One exception to the rule is the BENDER flag – this 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 the individual tracks.

TRACK MIDI CHANNEL (MCH)

The MCH row indicates 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 the 1 position.

Now turn the MCH 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.

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 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 PITCH DIRECT ENTRY

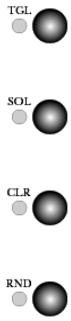
You may have noticed that the pitch value is also indicated in the pitch inner circle on the right hand side, as you change it and otherwise. Pressing the upper C key in the circle will transpose the track one octave up; pressing the low C key will first transpose it to the C, then one octave down.

TRACK MUTATORS

You may have noticed that the mutator column has several LEDs lit up. They are labelled according to the mutator functions that they trigger.

SIGNALING

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.



TRACK TOGGLE (TGL)

This simply toggles the track on or off. It is equivalent to muting or un-muting the track when in PAGE mode.

TRACK SOLO (SOL)

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)

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

The pitch will be set to the default value of 60. Note that the factory pitch assignment can be recalled by calling the CLR mutator upon a PAGE.

If you are zoomed into a Track, CLR only clears the steps and step offsets; any Track attributes will remain in place. This is one way to duplicate attributes for chained tracks – copy and paste and then clear the track.

If you are at the PAGE level and grab a Track and clear it, everything is reset.

TRACK RANDOMIZE (RND)

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

TRACK FLAT (FLT)

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

Please note that 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.

Another thing 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	Yes	Yes
PIT	Yes	-
LEN	Yes	Yes
STA	Yes	Yes
POS	Yes	-

*see TRACK ATTRIBUTE MAPS section for details on what this means.

TRACK ZOOM (ZOM)

The ZOM key is used to zoom into and out of certain views – in this case it would zoom out of the Track mode and back into the Page mode. The fact that you are zooming out is indicated by a red LED light, as opposed to an orange one.

When in page mode, hold one track selector down and press ZOM to zoom into the track – this has the same effect as a double click on the track selector. We will talk a bit more about the ZOM mutator when we describe the MAP mode.

TRACK COPY AND PASTE

Copying and pasting tracks has already been described earlier.

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

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 release the SEL button again.

SELECTION RECALL

Once you release SEL, the selection will be cancelled, but SEL will store the last track selection you have made. Holding SEL down again will bring back your previous selection.

Holding SEL down, 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.

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 may or may not influence the set track parameters. Each track can be played as it is, or each track's steps may be played using the same set of track parameters as its base.

While the preset chain modes were covered in the start-up section, we shall now look closer at flexible track chain configurations.

SELECTING CHAIN MEMBERS

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

CREATE 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 9 to row 0).

There are cases when you will see this order changed as a result of some more interaction with the chain structures inside a page. This has to do with the way a chain is defined internally.

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 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.

WHAT ABOUT PRESET CHAINS?

By now you may wonder, what about the preset chain configurations on offer? Well, they are nothing more that preset chain configurations with shortcut buttons.

TRACK BASE SWITCH

You can switch the track base of a chain from using individual track base values to using the track base values of the head track.

Simply toggle the chain selection indicator between orange and red. Orange 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.

Note that this switch will work equally for preset and custom chain configurations.

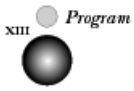
One more thing to mention about the track base for a chain - in the context of muting or un-muting tracks that are actually part of a chain. If the chain head is the base of the chain, then the mute operation of any chain members will apply to all tracks in that chain. Note that it will be a toggle operation, so it will invert the mute pattern of the set of chained tracks.

TRACK PROGRAM CHANGES

MIDI PROGRAM CHANGE

In Track mode, you may have noticed that the Program LED is lit in orange and the Select LED next to it is lit in green. Also, the numeric field is not showing the global tempo value anymore, as it does in the PAGE mode.

We are using that area to edit and send MIDI program changes to the channel of the selected track.



First, select the MIDI channel you would like to send the program change on as the track MIDI channel.

Next, dial in a program number, using the rotary encoder on the top right. Alternatively, you may want to key in the number of the program you want to select.

Once selected, press Program and you should hear / see the program change occur.

A couple of side notes are necessary here. First, consider that not all synthesizer manufacturers use the same numbering scheme for their programs, i.e. some start counting at 1, some at 0. However, the underlying values are always in the range 0-127.

The Octopus convention is to display values in the range 0-128, where a value of 0 means that no program change message is sent. Therefore, the program changes are numbered in the range 1-128.

Secondly, a program change message will be sent every time the Program key is pressed in TRACK mode, regardless of all other circumstances.

However, if you keep the Program key pressed while turning the knob, the program change messages will get sent as you increase or decrease the PC number via the main knob.

Furthermore, all program changes contained in the tracks of a page will be sent (once) as soon as that page is enabled for play – either as part of a cluster, or by manual intervention.

MIDI BANK CHANGES

You can also issue bank change messages. This is done simply by pressing the Select button and turning it orange. In that case the number displayed will correspond to the bank number, and the bank change message will get sent as soon as you press the Select button again.

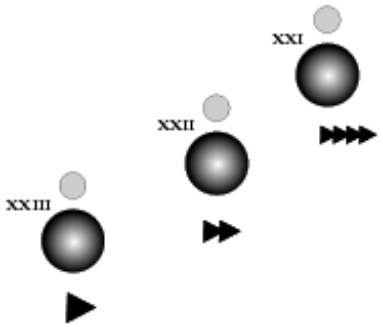
Bank change messages will be sent also when a page is activated for play, but not when you send program change messages from Track mode.

TRACK TEMPO MULTIPLIERS

One other interesting parameter is the track tempo multiplier. Basically this selects whether a particular track is to be played at master tempo, or for example twice, or four times that speed.

Several tempo multipliers are available.

To change a track's tempo multiplier, while in TRACK Mode, use the play buttons with one, two or four triangles in the transport bar.



For example, by double clicking on the >> and >>>> buttons, the tempo will be set to ½ and ¼ respectively of the master tempo.

You may switch between the tempo multiplier settings as you like. The table below shows the available multipliers and the key press combinations needed to get to them.

Tempo Multiplier	Hold	Click	Double-click
1		▶	
1.5	▶▶	▶	
2		▶▶	
3	▶	▶▶	
4		▶▶▶▶	
5	▶	▶▶▶▶	
6	▶▶	▶▶▶▶	
7	▶ ▶▶	▶▶▶▶	
8	▶▶▶▶	▶▶	
16	▶▶ ▶▶▶▶	▶	
1/1.5	▶▶	▶	
1/2			▶▶
1/3	▶		▶▶
1/4			▶▶▶▶
1/5	▶		▶▶▶▶
1/6	▶▶		▶▶▶▶
1/7	▶ ▶▶		▶▶▶▶
1/8	▶▶▶▶		▶▶
1/16	▶▶ ▶▶▶▶		▶

The values selected for a track are indicated as follows: In general, red dots denote multipliers and green dots denote divisors of the cardinality.

For example, having the LEDs of ▶ and ▶▶▶▶ lit green at the same time denotes a divisor of 5, meaning a track multiplier of 1/5.

Exceptions to the rule include the 1.5, 1/1.5, 8, 1/8, 16 and 1/16 multipliers, covered below.

The 1.5 multiplier is, as it may be obvious already, essential for

easy triplet creation - a triplet being three notes played instead of two. The 1.5 multiplier is shown as an orange 2 and a red 1. Its inverse, the 1/1.5 multiplier, is shown as an orange 2 and a green 1.

The 8 multiplier is shown as an orange 4 and a red 2 LED. 1/8 is shown as an orange 4 and a green 2.

The 16 multiplier is shown as orange 4 and 2 plus a red 1, and 1/16 is indicated as an orange 4 and 2 and a green one.

Please note that during play, switching the clock multiplier is effective immediately with no quantization with regard to the master tempo.

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.

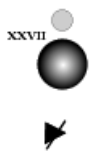
TRACK VIEW SWITCH

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, in our example track 6. The display will instantly switch to showing parameters of track 6.

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.

FOLLOW



There is also an automated way of switching the track in the view – that is the FOLLOW mode.

When Follow is active and you are zoomed into a track that is part of a chain, the view will always follow the chase light in the respective track chain, in the sense that it will always show the track that is currently played by the chase-light.

Activate Follow by pressing the red follow button, making it green. Deactivate Follow by pressing the button again, toggling it back to red.

TRACK CHORD STACKS

The steps of a track may be stacked with pitches from a selected scale. To select a scale please follow the instruction in the section describing the scale mode.

The CHORD stack indicator shows how many notes the stack will contain. Using the example of a three note chord on a track containing steps all in C and a selected scale of C major, we would now have the track play on each set step a chord of C-E-G. This assignment is fixed for all notes on the track.

However, a step that is set to play a chord (see section on step chords) will not be influenced by the track chord stack. In other words, the track chord stack will be overruled by step chord settings.

V PAGE MODE

BASIC OPERATION

WHY PAGE MODE?

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.

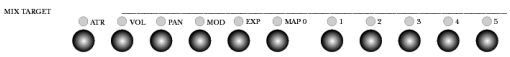
THE MIXER BLOCK

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, where applicable.

The main task of the MIXER block, on the other hand, is to change a particular parameter of the tracks corresponding to each of the knobs.

The parameter that is changed can be selected directly, using the MIX TARGET button set – right below the matrix field.

While in PAGE mode, you will see that one of the MIX target LEDs at the bottom of the matrix is lit - possibly ATR, since this is the default setting and you probably have not changed it until now.



VIEWING THE MIXER MAP

Double click the ATR button. This brings you to the MIX TARGET assignment, where a parameter can be assigned to the MIX encoder group.

The Mix Target LEDs light all up, indicating the selected target in blinking orange. Also, the matrix is showing in every row the value respective to the corresponding track for the chosen attribute.

QUICK ASSIGN

A very quick way to assign an attribute to the MIXER BLOCK is to select the attribute (i.e. to select GRV, press and hold the selector of row 2), while pressing the MIX button. Or vice versa – hold the MIX button pressed and press the track selector corresponding to the wanted attribute.

By pressing the MIX button you will notice that the selected attribute has been changed – the current selected mix attribute is blinking orange in the selector column.

WORKING WITH MIX MAPS

While viewing MIX maps, you can 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 RND

button. This will assign random values to all tracks at once – for the selected attribute of course.

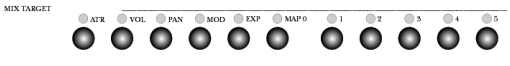
ALIGN
Using the ALN function you may re-order the tracks in the page, sorting them in the page by the values of the selected MIX MAP attribute. The sorting will be done such that the track with the highest value will be placed on the top row. Try it out!

COPY / PASTE
Finally, if you have composed a page whose MIX map you would like to replicate, you may use the CPY / PST functionality to replicate that attribute assignment across the tracks.

For example, assuming you have a page whose pitch structure creates a certain mood or harmony; you can apply the same mood to an entirely unrelated page or pattern, by simply copying the PIT map from one page to the other.

MIX MAP TARGETS

Going back to editing, there are three classes of targets: attributes (ATR), preset MIDI CC's (any of VOL, PAN, MOD, EXP), and CC user maps (MAP 0-5). Some explaining is due here.



ATTRIBUTES

If the ATR type is selected by a double click, the SEL buttons will light up green, indicating that any of them may be selected. The already selected attribute will blink orange.

The matrix will show the value relevant for the respective rows. All rotary knobs act upon the same attribute on their respective track. For example if PIT (pitch) is selected, every rotary will change the pitch of its assigned row.

PRESET MIDI CC'S

The MIDI CC's behave the same as the ATR targets. The CC's used are: VOL (7), PAN (10), MOD (1), EXP (11).

CC USER MAPS

Using a CC map, any knob can be assigned an individual CC on a chosen MIDI channel. This is best explained using an example: double click on MAP 1 to select CC map 1.

You will notice that the AMT button will blink orange indicated that AMT is selected. The matrix shows the per-track AMT values. Now select the MCC button. Here the Matrix shows the Midi CC assigned to the tracks.

You can modify the CC for every individual track using the rotary knobs. Remember that four green LEDs in positions 13, 14,

15, and 16 indicate no CC has been assigned.

Now press the MCH button. This view allows you to assign the MIDI channel on which the CC signal is sent. Note that this is not the MIDI channel of the Track – the track's MIDI channel is an entirely independent parameter.

TIMEOUT

The MIXER block may be used at any time during PAGE mode operation. In order to make the effects visible, once you operate any of the MIX encoders 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.

PLAYING GRID MAPS

For speed and convenience it is also possible to use settings of the GRID CC Maps directly from within pages.

This is especially useful when you have assigned some "global" mappings to the GRID maps and want to use them at any time during operation – without the need to switch back and forth between PAGE and GRID mode.

Select one of the CC Maps, 1-5. You will see that the LED for the corresponding map is lit orange to show that it is currently active. Also, you will see that the LED of MAP0 is lit (per default) green.

Press the MAP0 button and you should see the LED toggle between the green and the red state.

Toggling the state of the MAP0 LED is causing a switch between the MIX encoder block operating using the PAGE MAP parameters (MAP0 LED is green) or the GRID MAP parameters (MAP0 LED is red).

PREVIEW STATE

Octopus provides a quick way of previewing steps, in the sense that you can immediately hear what they contain, and how they would play.

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 red (and back).

When the EDIT LED is green, everything behaves as you know it. When turned to red, you are in the preview state.

PREVIEWING STEPS

Make sure the EDIT LED is red. 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 retriggered and played such that you can hear the change in real time.

PREVIEWING 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, an ATR may be temporarily assigned to the EDIT knob group.

ENGAGE

This is done by holding the selector of the respective attribute to select the attribute, and at the same time pressing the EDIT master button to make the actual assignment.

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.

DIS-ENGAGE

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 FUNCTIONS

When in PAGE mode, holding the PAGE key pressed will make some mutator functions available for the page itself – the expected results should be quite obvious.

APPLICATION

Applying them is a matter of pressing the appropriate mutator button.

TGL
Pressing TGL will toggle the page play status in the grid.

SOL
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

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

RND
This will fill the page with random step patterns on all tracks. Note that the track attributes are not affected, just the step patterns.

RMX
All tracks in the page will be applied the RMX function. See track mode for details.

CPY
Page can be copied to the copy buffer. The copy operation will include the chain configuration local to the page at the time of copy.

PST
Copy buffer will be pasted into the present page position.

PAGE POSITION IN GRID

Another function available is jumping to another page of the grid. For more information on the grid please refer to the introductory chapter on general concepts as well as the next section dedicated to the GRID mode.

As you press the PAGE key you will notice an 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.

BANK VIEW

When in PAGE mode, by default you see a green lit Select LED in the top right quadrant of the circle, along with the orange Tempo LED.

They indicate the two available modes for the main knob and the numeric field.

ENTERING BANK VIEW

Pressing Select will allow you to see in the numeric field the banks that are currently playing as green lit buttons.

The orange blinking one is the bank currently in your matrix editor.

Note that this says nothing about which column in the bank is currently playing.

Pressing any of the green lit buttons will take you directly to the currently playing page in that bank.

Turning the main knob will incrementally take you through the playing pages.

EXITING BANK VIEW

Press the Tempo button to return to the standard Tempo display.

PLAY MODE

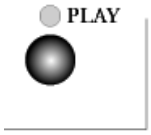
The PLAY mode provides the capability to try new things in a page, in a non-destructive manner.

Activating the PLAY mode is equivalent to taking a snapshot of the currently playing page in a bank for later recall, in case the results of your editing do not live up to your expectations. Notably, the play mode snapshots include track mute patterns of the respective pages.

Also note that engaging the PLAY mode may be done from both page mode and from grid mode.

ENGAGING PLAY MODE

To activate the PLAY mode press the red PLAY button in the MODE block and you should see it blink



green. Also you will notice that the Program button will be lit red.

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 Program to make the changes permanent.

DISCARD CHANGES

To discard the changes, press PLAY again, exiting the PLAY mode and recalling the state of the page from just before you started.

VI GRID MODE

BASIC OPERATION

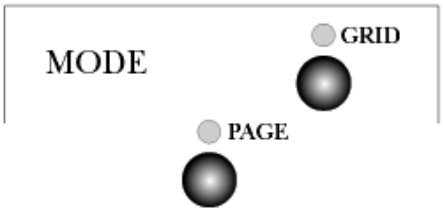
WHY GRID MODE?

The GRID mode will typically be the mode used for controlling 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.



Now start the sequencer. You should see the note inner circle being filled up with a progress bar.

GLOBAL MASTER CLOCK

This progress bar really indicates the position of something you may think of as the global master clock of Octopus.

This clock runs through 16 cycles after which it starts over. This is the lowest-level Octopus 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 an orange blinking light at the respective position.

Note that this shows something you can think of as the “page in focus”, 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 1-9 represents a page, and the LEDs indicate the status of the pages.

MATRIX REPRESENTATION

OFF means the page is empty, GREEN means the page has some content and is playing, RED means the page does have some content and is not playing.

Later on you will get into the situation where page LEDs may turn orange, indicating that the page is queued up for play.

ZOOMING INTO PAGES

You will see that the ESC LED is lit up in GRID mode. This may be 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.

Generally, 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 you want.

Alternatively you may also press the ZOM button while pressing the page button. What you finally choose is really 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 TGL to make it active.

By telling you how to leave the GRID mode, we have already given away a lot about how to work with pages in the GRID; hopefully just as you would expect. The key principle here is to grab and operate, but this should be no surprise this far.

PAGE CLUSTERS

WHY 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 CPY / PST / CLR mutator functions 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.

Clustering side note: 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 (10 tracks per page) this means we get a total of 160 x 16 = 2560 steps playing consecutively.

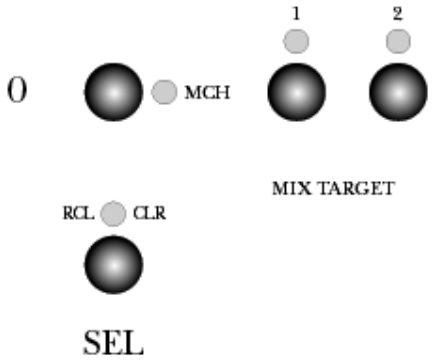
Add to that the capability of allowing any page to be repeated up to 16 times – let's look at that next.

PAGE 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. 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 select the number of repetitions in row 0 – for any number between 1 and 16.

You may press on a page's key and you will see the repetitions value along with the currently left number of repetitions for play.

Another way of modifying a page's number of repeats is to hold the page selected in the grid, while turning the STA knob in the edit block. That's it!

PAGE LENGTH

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

Sometimes, 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 behaviour 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.

When pressing the page button, notice that the SEL LED in row 0 will be lit and can be pressed to change colours between red and green. Make sure to set it to green.

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.

In order to change that, use the row zero buttons and click / double-click them to achieve the desired result. Note that the maximum length of a page can be set up to be 8 cycles, or 128 step lengths.

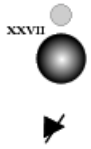
Also note that to create a page length of less than 16, you need to double-click the 1 LED to turn it off, then single click on the keys 1 to 15.

Another way of modifying a page’s length is to hold the page selected in the grid, while turning the LEN knob in the edit block. Simple as that.

PAGE FOLLOW

At any time during play in GRID mode you may zoom into any page you would like by the methods described already.

If the page is part of a cluster and some page in the cluster other than the zoomed one is playing, you may want to see the position of the chase-light in the cluster.



Press the green Follow key to enable the follow page function, turning it red. You will notice that the matrix display will always switch to the page that is currently playing, essentially following the chase-light as it moves forward through the pages of the current bank.

This is particularly useful when you are working on structures longer than one page. Pressing the Follow button again will freeze the view on the page currently showing.

An easy way to remember the colour coding could be:
RED: stick to the red chase-light,
GREEN: stick to the green steps.

VII PERFORMANCE TOOLS

WORKING WITH PAGES

This section is assuming we are working in the GRID mode, where we have control over the behaviour of individual pages. Please switch to GRID mode if you are not there already.

The Matrix field keys in rows 1-9 represent pages. At any given time, only one page in every row (bank) can be playing. So there may be up to 90 tracks playing concurrently.

PAGE ACTIVATION

In order to activate a page for play you just hold it pressed and press TGL. Repeat the procedure to make it not play any longer.

TGL will have an effect on a page only if the page is not empty (i.e. lights red or green).

When you grab a page, you will also see that there is a set of mutators available for the page. Their semantics is very similar to that of tracks.

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

PAGE MUTATORS

SOL will solo the page in the entire grid – pressing SOL again will un-solo it. Only one page can be in solo mode at any one time. Groups of pages playing concurrently are handled by the page sets feature described below.

CLR
This will rest the page to default, so make sure you are not calling CLR on a page whose contents you would rather keep.

RND
This will randomize the contents of the selected page, giving a good playground to inspire you.

RMX
This will call the Remix mutator function on each of the page's tracks.

ZOM
We have looked at already – it takes you into the page in question.

CPY
This will copy the page to an internal buffer for later PST operations. Once a CPY operation has taken place you will see that the PST operation becomes available.

For convenience (explicitly and consciously against consistency), holding the PAGE MODE button in GRID mode and pressing the button of a page in the grid will zoom into that page.

PAGE TRANSPOSITION

When a page is selected in the grid, you may notice that the pitch circle lights up. It indicates the page's pitch offset and lets you modify it, in order to transpose the entire page content in one place. Alternatively you may use the PIT encoder to adjust it as well.

To transpose the page by one full octave respectively, you may use the High C and Low C keys in the circle.

PAGE VELOCITY FACTOR

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

Simply select a page in the grid, and while it is selected, turn the VEL encoder. The numeric quadrant of the outer circle will display the factor value.

PAGE SWITCH MODES

When switching pages in and out of the grid you will usually want them to start playing right on the beat – and they will (provided the progress bar of the master clock is lit red).

IMMEDIATE SWITCHING

You may also choose to have toggled pages start and stop immediately as you operate the TGL button. For that you have to make sure that the master clock progress bar is lit green.

To toggle between red and green you just press the Tempo button at the top right of the outer circle and you should see the colour of the master clock progress bar change accordingly.

In summary, there are two page switch modes, which we call "O'CLOCK" and "IMMEDIATE". To toggle between them simply press the Tempo button. O'CLOCK is denoted by a red master clock indicator, IMMEDIATE by a green one.

RE-ALIGNING PAGES

When operating in the direct toggle mode (green progress bar) 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 ALN button, like you did for tracks inside a page, earlier on.

GRID CC MAPS

Just as seen in the page mode, the GRID has the notion of a CC map – i.e. you may assign CC functionality to the MIX encoders.

You can do this in the same way you have seen in the PAGE mode – double click on the lit MIX target button and edit the map to your needs.

This is useful when you are looking to control some parameters of a more global nature, such as certain instrument volumes, or other things that are not specifically bound to a particular page.

There are 5 GRID CC maps. When in GRID mode, you may switch between them directly by pushing their corresponding buttons in the MIX target section of the panel.

GRID MODE PAGE MUTES

In GRID mode, when no page is grabbed (i.e. held down), the mutator buttons take on a similar role to the one that the main MUT button has in PAGE mode - that is, toggle between a stored track mute pattern and back, in the page that is momentarily playing in the GRID.

As such, the colours of the LEDs should become clear: an unlit LED means there is no page playing, or the page does not have a mute pattern - neither stored nor active.

A green LED means there is a stored mute pattern that may be activated, and a red LED means that there is a mute pattern active in the page.

Finally, pressing the main MUT button will toggle all mutators, i.e. all green ones will be turned red, and vice versa, with the implications already described above.

PAGE SETS

WHY PAGE SETS

When you have a certain number of pages in the GRID, which you are tweaking and playing in various combinations, you will eventually find combinations that you would like to recall quickly.

CONCURRENT PAGE ACTIVATION

Octopus can store the pointers of all active pages at a given time in what we term a Page Set. Activating or switching between Page Sets can then be done by the press of a button at playtime.

The operation is equivalent to and a shortcut to toggling a set of pages on – with all the rules that apply: only one page per bank will play, banks determine cluster behaviour, page length is determined in the pages.

WORKING WITH PAGE SETS

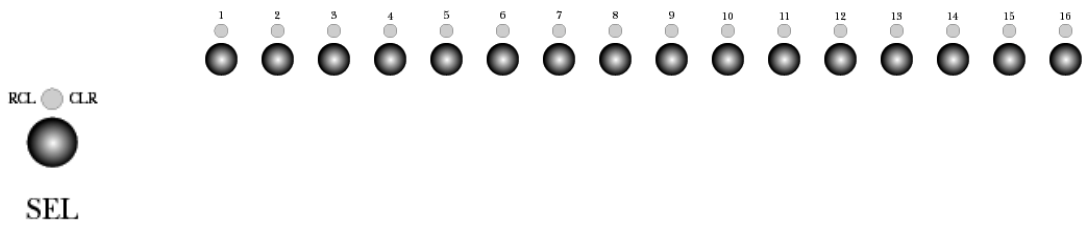
Simply activate in the matrix the set of pages that you would like to store for recall.

Once they are all playing, press and hold the green Select button, while you press any of the 16 buttons in row 0. The buttons in row zero represent memory slots for storing your page sets.

You will notice that once you have stored a set, into a slot, its corresponding LED turns green – indicating that the set of that slot is now playing in the grid.

Now press the button of an empty slot – you will see that all pages stop playing, the slot LED lights orange (it is empty), and the previously saved slot is lit red – because it is not playing.

Pressing the red slot button will recall the page combination you had defined before for this particular slot.



GRID-TRACK MODE

The GRID-TRACK mode may be imagined as a sub-mode of the GRID Mode.

WHY GRID-TRACK MODE

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

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

Entering the GRID-TRACK mode To enter the GRID-TRACK mode, enter the GRID mode first (by pressing GRID) and then press the green-lit TRACK button.

The TRACK button will blink orange, and the GRID button will stay lit in orange. This indicates that you are in the GRID-TRACK mode.

VIRTUAL TRACK SELECTORS

The Matrix will slightly change its contents and some explanation is necessary to what it now conveys.

For each page playing in the GRID, you will see a lit bar of 10 LEDs, from position 4 to position 13, leaving three blank columns of buttons on each side.

Each lit button acts as virtual track selectors and the LEDs indicate the mute / un-mute state of the corresponding track.

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 10 green LEDs in row 1, positioned in the centre of the row (3 unlit LED's to each side of the 10-LED bar).

WORKING WITH TRACKS

Moving from here is easy: press and hold any of the virtual track selectors and you will see that two mutator functions become available: TGL and SOL.

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

When exactly one track is selected in GRID-TRACK mode, the pitch of that track becomes visible and editable in the inner circle, just as we have seen it in PAGE mode.

QUICK TRACK TOGGLE

Sometimes all you want to do in GRID-TRACK mode is mute and un-mute tracks on the fly. There

is a quick way to do that by holding any button that belongs to columns 1-3 or 14-16 while pressing a virtual track selector. The virtual track selector now directly toggles the mute status of the respective track.

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.

BACK TO GRID-TRACK MODE

To return from TRACK mode to GRID-TRACK mode simply press the GRID and TRACK mode buttons at the same time – this proved to work well.

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.

VIII MUSICAL TOOLS

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.

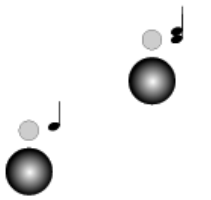
Chords can be directly programmed in, or directly recorded (see the section on MIDI IN RECORDING) into a Step.

To set the stage, while in STEP mode, notice the CHORD button section at the bottom right of the front panel. You will see that one of the seven LEDs is lit up.

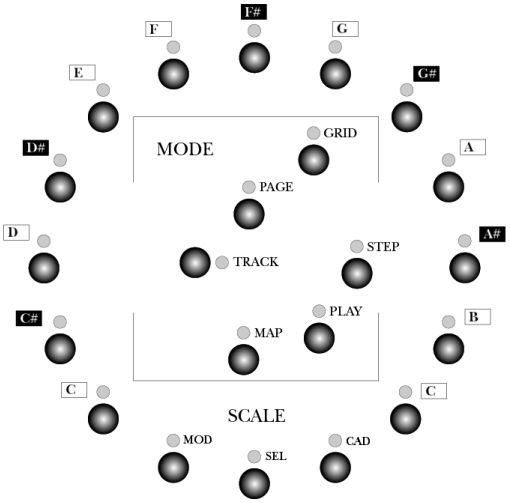
By default this should be the single note chord. This indicates the cardinality of this step, and in this case it means that this step will play once at its base pitch.

PLAYING CHORDS

Press and hold any of the CHORD buttons down. Use the octave circle to toggle notes in and out of the chord up to a cardinality of seven. The added notes are shown by green LEDs.



You may have noticed that the octave circle is showing the base pitch of the step lit orange. In the process above, make sure to not press the button of the base pitch – we will explain this in a bit; this has to do with step re-triggers (explained further down in the text).



Please note that the chord may only be built with the step pitch as the base and within one octave range from that base. This means that changing the PIT offset of the step will implicitly transpose the chord as well.

Try holding down a chord button, compose a chord, and tweak the PIT encoder. You will see how the chord gets transposed across the scale.

Further pitch adjustments may be made using the strum pitch setting. We will see how that works in just an instant.

If you are done composing your chord, release the chord button. You should see that the cardinality of the step trigger is now indicated by the appropriate chord LED.

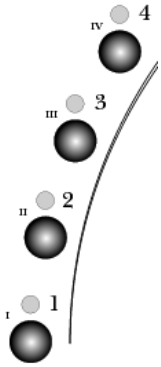
Every time the step is played, you should hear the chord that you have programmed in. To remove the chord from a step, simply remove all “extra notes” from the chord. The base pitch will not be removable.

Note that steps that are set to play chords will be displayed by an orange dot while in PAGE mode. Steps that play only single notes are green.

STRUMMING CHORDS

To strum a chord, zoom into the step containing the chord, hold any of the chord buttons pressed and turn the main rotary clockwise. 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.

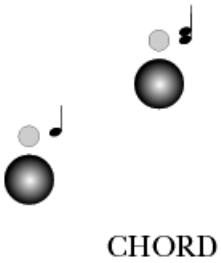
Turning the main rotary counter-clockwise will show the red values -9 to 0, which are indicating that you are now strumming the chord down.



While you can configure the strum behaviour in great detail for each strum level, Octopus comes with a preset strum configuration which affects the note start values (only). The strum effect increases exponentially with the strum level chosen.

CONFIGURING STRUM LEVELS

In order to configure the strum levels, double click on any of the chord buttons and you will find yourself in the strum level configuration page. Some explaining is necessary here.

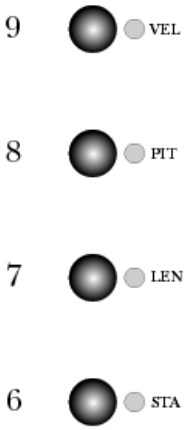


You should see the single note chord LED blink orange. This indicates that you are about to edit the settings for the first note in a chord. In the SEL column you should also see an orange blinking LED indicating the attribute you are just setting – the default is STA. An empty Matrix field simply confirms now that the first note in a chord will play right on the beat, no matter what strum level is set for a chord (0 to 9).

CONFIGURING STA

Now press the two-note button in the CHORD section. You will see that the Matrix now does display some numbers in the individual rows. The way to interpret this is as follows:

The row numbers correspond to the strum level number. So, row 5 sets what happens at strum level 5. The individual note number positions in the strummed chord are selected with the chord note buttons.



Row 0 showing a 0 means that note number 2 will be played on the beat (STA offset = 0) when in strum level 0.

In strum level 1, note number 2 will be played with a STA value

of 1, likewise in strum levels 2, 3, 4 and 5.

Note that the STA offset is always relative to the STA of the step holding the chord, and not absolute to the beat grid. You also see that in strum levels 6, 7, and 8, note number 2 will play with STA offset of 2 and at level 9 with STA offset of 3.

You may use the MIX encoders to adjust the STA offset and therefore strum start behaviour at each strum level for any of the 7 notes a chord may be made up from.

CONFIGURING VEL, PIT, LEN

Adjusting the offsets for the other attributes (VEL, PIT, and LEN) is done in the absolutely same fashion, simply select the note level and attribute you want to edit and use the MIX encoders to enter the values.

To change the strum spacing for level 9, press each note in the chord area and adjust the value showing on row 9 only. If you adjust the STA value high enough on a low note level, that note in the chord will play after other notes at higher levels.

All kinds of interesting effects may be obtained by dialling in different values for STA, LEN and VEL for each note level.

NOTE: the settings for strum levels are global – i.e. apply across the entire machine. Changing strum levels on the fly while playing may have some interesting side effects.

If you decide that you do not like the various amounts set, use the CLR mutator to reset that note level's attributes back to the factory default.

If you have changed more than one level, you need to go back to each note level and CLR it to return the factory defaults.

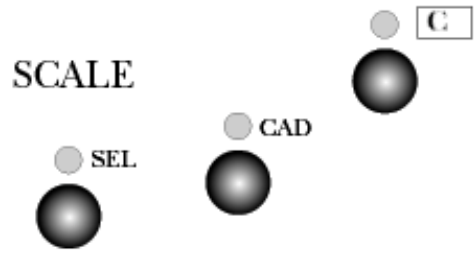
MOVING ON

To exit the strum level configuration, press the Step Mode button to get back to Step ZOOM mode. If you press ESC, you will exit back to Page Mode.

STEP REPEATS

While in Step ZOOM mode, hold down the chord button of your choice.

If you now press the base pitch button, you will notice that the upper C LED will light up, and with every press it will cycle through the following states: off-orange-red.



In fact, if you press the upper C button you will see the same behaviour. In short, the upper C or base pitch button is the flag used to retrigger steps.

The three states we have seen are defined as follows:

OFF

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

ORANGE

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

RED

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

Try both the Orange and Red modes with synthesizers, percussion modules, and samplers. Also try adjusting the STA and LEN values for the strum level you selected.

NOTE: 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.

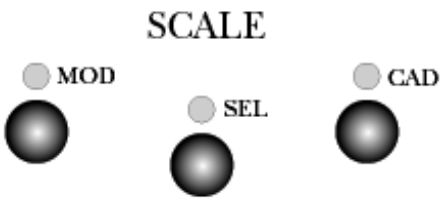
PAGE SCALES

Each page can be associated with a particular musical scale. Once that association is done and a scale is active, all page notes are forced to play in the chosen scale.

FORCE TO SCALE

Force to scale is enabled by simply pressing the green lit SCALE SEL button. Coming from the default state, you will see its LED turn red and all scale notes light up, with the exception of upper C. Conversely, force to scale is disabled by pressing the red SCALE SEL button, which indicates that force to scale is engaged.

So, in general, the red LED of SCALE SEL is indicating that the page pitches are forced into the scale, a green LED indicates that the page is playing the pitches as they are.



The lower C LED is also lit orange. What you see here is that all notes are selected in the scale, and that C is the base tone of this scale. Let's now modify the scale to get more interesting effects:

CHANGING SCALE NOTES

Press the Select scale button (in the outer circle, button XIV) and it should blink orange, while the Chr. scale LED is lit orange.

This picture is telling us that the chromatic C scale is currently active, but that we may select any notes in our current scale.

Now press any of the note keys in the scale circle to toggle the corresponding notes into and out of the scale, putting together any scale you like.

Another way to select a scale is to push any of the scale LEDs in the outer circle, to get the scale structure associated with their label, always on the base tone indicated by the orange LED.

CHANGING THE SCALE BASE

In order to change the base tone, press the SCALE MOD button to enter the scale modulation mode. Here you may select any of the current scales tones as the new scale base.

SCALE CADENCE MODE

Another way of operating the Scale data is to combine it with the CAD functionality. What this means is that any changes done to the scale will translate into immediate mappings onto the track pitches in the page at hand.

To activate the SCALE CAD, please activate force-to-scale if not already active, and then press CAD (so it blinks red indicating operation).

In order to make the effect clearly visible (on top of audible) you may also want to select the MIX mode for the track pitches (double click on the ATR key in the MIX TARGET field, then select PIT).

Now modify the scale as described and you should see the changes to the track pitches as they materialize in the matrix.

EXITING THE SCALE MODE

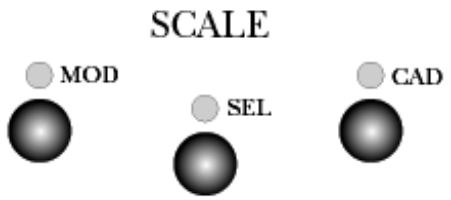
You may want to have your page notes forced to the selected scale, but not see the details behind that and also prevent any unintended changes to the scale, essentially locking it.

In that case, while in SCALE mode, press ESC to leave the page forced to the scale, but to exit the SCALE mode. You will notice that the SCALE SEL LED will blink orange, indicating that the page is forced to scale. To go back into the scale edit mode, simply press the orange blinking SCALE SEL LED.

THE GRID SCALE

The GRID may be assigned a scale, in the same manner that a scale is assigned to a page, except the GRID scale will act globally.

To operate the GRID scale, switch first to GRID mode. Use the SCALE SEL button and proceed as already described in the section describing the PAGE Scale operation.



EXEMPTING PAGES FROM GRID SCALE

Note that by definition, the GRID scale is overruled by any other scales active in particular pages.

Therefore, an easy way to exempt a page from the grid scale is to force that page to a chromatic scale.

This may be particularly useful in the case of percussive material for example.

IX ADVANCED TOPICS

CUSTOM TRACK DIRECTIONS

As we have seen in earlier sections, each Octopus track may be assigned its own running direction. This is exciting, but neither new, nor spectacular.

WHAT IS SPECIAL

What may catch your attention though, is that on the Octopus you can not only specify what direction a track should play, but in most cases also edit that direction to your particular gusto.

Directions 1-5 are read-only, while directions 6-16 are user editable. Interested?

To see how all this works, let's take a quick step back and realize a couple of things. Then you will see how the pieces fall into place.

VIEW ON DIRECTIONS

To begin, have a track run at the default forward direction (Direction 1). Let it run for a few cycles in the forward direction, then stop.

THE ESSENCE

Think about what you just saw: the forward direction is really "the sequence of chaser light positions in each of 16 slices of time it takes to play all steps in a track". Makes sense? Realizing this is the key to understanding how editing directions works.

TRIGGERS AND SLICES

Each of the 16 slices needed to play a track from end to end (no skips for now) specifies its own chaser light position trigger. For the forward direction, in slice 1 we have a trigger for chaser light position 1, in slice 2 a trigger for position 2, etc.

In simple terms, when a track is played, the chaser light will be moved according to the triggers specified by the slices that make up that particular direction. For example, the reverse direction has the trigger sequence [16, 15, 14… 1] assigned to its slices.

FULL AND EMPTY SLICES

To take it one level further, a slice is not restricted to holding only one trigger, but may hold up to nine triggers.

These nine triggers will be played in sequence every time the respective slice is being played. This implies that a slice may take as long as nine times to play completely, because it fires up to nine triggers.

So what do we get from empty slices, i.e. where no trigger is specified? Well, every time Octopus gets an empty slice, it will pick a trigger for you at random, and play it normally.

CERTAINTY_NEXT

The sequence of slices is per default set to be a solid 1, 2, 3 …16. But you can change that. Each slice has an associated „certainty_next" parameter, which is expressed as a percentage.

A setting of 100% means that the next slice will be the one following naturally (i.e. slice 3 will be followed by slice 4, etc.).

A setting of 0% will specify that the next slice will be the naturally previous one (i.e. slice 3 will be followed by slice 2).

Any value in-between will produce the obvious: for example, a setting of 50% will mean that there is a 50/50 chance by which the next or the

previous slice will be called – and then its triggers played.

Note that the certainty_next parameter applies to the switch between slices, but does not apply to the trigger set and sequence inside a particular slice.

EXAMPLE

For example, let's assume slice 4 has a certainty_next of 50% and a trigger set of 2, 5, and 8. Once started, the slice will first fire up its triggers (2, 5, 8) and then decide which slice to call next – slice 3 (previous one) or slice 5 (next one).

PLAYING DIRECTION MAPS

So now, how do you work with all of this? The answer is „Direction Maps“. From Track Mode (of any track), select for that track the direction you would like to program.

Make sure to choose a direction between 6 and 16, since directions 1-5 are read-only and cannot be modified.

After choosing the direction, double-click on the DIR attribute button to enter the direction map. In this view, you will see in row 0 an orange light, reminding you of the index of the position you are just about to edit.

Press some of the keys in row 0 and you will see a green blinking light following your presses – the green blinking light is showing you the index of the slice that you are just editing. When the blinking green and the orange light overlap, you will get a blinking orange light.

EDITING TRIGGER SETS

The area above row 0 (i.e. rows 1-9), will show none, one, or more red lights, which specify the triggers contained in the selected slice.

You may select triggers at will by simply toggling them in the Matrix, but there can be only one per row: the trigger sequence is naturally given by the rows you select them in. Therefore, a row will only hold one trigger.

Rows holding no trigger will simply be ignored at runtime. But remember, if all rows are empty, you will get a random trigger to play in that slice before the next slice is called.

EDIT CERTAINTY_NEXT

While editing, you may jump between trigger sets using the key of row 0 as you like. Last thing to mention is the certainty_next probability.

This is simply the number shown in the numeric field of the circle, in the top left quadrant. The number is edited as expected, using the top right rotary encoder, in addition to the buttons in the numeric quadrant. Here, some key combinations may be of interest: double clicking 5 will produce a 50, clicking (simple) 100 will produce 100, and double clicking 100 will produce a 0.

For the rest, it is left as an exercise to the reader to look at how the five default directions are programmed, in order to get the final clarification or confirmation on having understood how the Octopus direction model works. Please also note the dedicated tutorial in the back section of this manual.

REMARKS

The direction map is no different to the other maps we have seen so far: press ESC at any time to return to the page mode, but be aware that any change you make to the direction will be permanent, like any other change on the Octopus. However, unlike with regular MIDI data, there is no „PLAY“ capability for the directions.

You may however use CLR to restore the default directions in the slots 1-5 and the forward direction in the other slots. In fact, remember that directions 1-5 are read-only and not editable.

Finally, when you need an inspiration boost, go into a direction map and start using RND. That one may get you going.

VIRTUAL MIDI CHANNELS

Octopus has the notion of virtual MIDI channels. They provide a mechanism to cross communicate data between tracks, Octopus internally, equivalent to an imaginary 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 automated change at runtime of scale settings for a particular page.

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

TRACK ATTRIBUTE MAPS

Now that we have looked in some detail at the mutators while in TRACK mode, you may wonder what is going on to the left of the matrix – in the selector column.

THE SELECTOR COLUMN

You see that some of the LEDs are lit up, and some aren't. Each lit button represents something we call an attribute map for the track. There are attribute maps for the following attributes: VEL, PIT, LEN, STA, AMT, GRV, and MCC.

WHAT IS AN ATTRIBUTE MAP?

Glad you asked. Simply put, an attribute map is a view of a particular step attribute for the entire track.

Confusing? Let's look at an example: the VEL map would be the view that shows you the velocity offset of all steps of a track at once.

This is true with one exception – that is the DIR line. In the case of DIR we do not have a map per se, but rather the capability to edit the direction configuration for the sequencer.

The details are explained in the chapter dealing with directions and we will disregard it in this section.

EXAMPLE

Press VEL and you will notice that keeping it pressed will make it blink orange and the mutator column will make CLR, RND and ZOM available.

Briefly – CLR and RND will affect the track VEL map and either clear it to default value or pick a random value. Now the interesting one:

SHOWING ATTRIBUTE MAPS

With the VEL selector still pressed, press the ZOM mutator to get to the MAP mode. What you now see is the VEL map of the track you are working on.

You can also enter MAP mode by double-clicking the attribute button (VEL in this example).

WORKING WITH MAPS

The matrix display is built up starting at row 0 with the pattern of the track under consideration: here you may toggle, select and skip steps as you would in PAGE mode, as already described in the introductory section – also holding them and tweaking their parameters will work – but leave that for a moment to avoid confusion.

If the sequencer is playing, you also see a red chase-light in the row of the track currently being worked on.

READING THE ATTRIBUTE MAPS

You may think of the area made up by rows 1-9 as divided into 16 columns, one for each step represented in row 0.

For each step, the column will display a bar corresponding to the value of the attribute whose map we are seeing. Remember that this is the attribute value of the steps, before the steps are affected by any sort of track offset.

REPRESENTATION

For values that can be negative or positive (VEL, PIT, STA), a zero value is represented by a line of LEDs on row 5. Positive values are above the line and negative values are below.

Now press any button in row 6 – as an example. You will see that the bar for the step in the column of your press will jump to the position of the button you have pressed.

READING THE REAL VALUES

The real value of the step attribute offsets can be read out easily by holding the respective step pressed in row 0.

For this purpose, you may also want to (temporarily?) use the preview mode (toggle the EDIT LED to red), such as to not affect the toggle state of the steps you are viewing.

The value is displayed in the numeric quadrant of the circle, and is always shown as a sum of the track and step value for that particular attribute. Also note that while the meaning of the large circle value is changing, the pitch circle is always dedicated to showing the pitch.

This is just a quick but very powerful way of entering data for the steps of a particular track.

Values may also be entered using the keys of the circle fields. I.e. entering a velocity value for a step is similar to entering a tempo value. You will see the new value reflected in the matrix display.

READING THE PITCH DISPLAY

The way to read the display is the following: the red dots will indicate the octave and the green dot will indicate the note in that octave.

For example three red dots starting at C and a green dot at G mean the pitch is G in octave 3. Exception: two red dots starting at C and an orange dot at D mean that the pitch is D in octave 3.

ENTERING PITCHES

Entering pitches is done by pressing the appropriate note. In order to transpose octaves use the left and right keys labelled "C".

FINDING YOUR WAY AROUND

The selector column allows you to jump directly between the available track maps.

The mutator column allows you to use some functions on the map.

CLR will restore default values, RND will choose random values for each column, and RMX allows you to call and actually observe what the RMX operation is doing to your track parameters.

ZOM, which is now lit red, will take you back to the track mode without unselecting VEL, and pressing ZOM again from there will bring you again into the map mode.

SHIFTING MAPS

The POS knob in the Editor block is also assigned a function – turn it and you will see your attribute map just shift around the track, without affecting the step toggle states or the other attribute maps, but having certainly surprising effects on your sequence.

SWITCHING TRACKS

You may fetch any track into the map view by simply ticking (to the left or right – it doesn't matter) the mix encoder corresponding to the map you want to fetch into the display.

MAP FACTORS

Maps are useful in the sense that we can see and edit a particular step attribute for all steps at once.

STEP ATTRIBUTE SCALING

There is another advantage we get from maps – and that is the easy factoring or scaling of step attribute effect on the play result.

Using a scaling factor for each map of a track, we can now determine to what degree a map is applied to the play data.

In fact, the track attributes LEN and STA themselves are really scaling factors for the corresponding attribute maps.

MAP FACTOR SETTING

In all cases, the middle setting of the scaling factor will play the steps unaffected, while tighter settings (lower values) will reduce the effect of the played map values. Looser settings will amplify the effect of a map on the played result.

The value range for the map factors is numerically between 1…17, with 9 being the neutral setting. Note that due to the way the display is set up, the values for LEN and STA shown in the TRACK mode are depicted as 0…16, with 8 being the neutral value.

Lower than neutral values have a reducing effect, higher than neutral values have an amplifying effect.

The neutral value is displayed as an orange 1, reducing values shown using a green bar, and amplifying values shown using a red bar.

WORKING WITH MAP FACTORS

In order to view the scaling factor of a particular map, go to track mode, and press and hold the corresponding attribute selector. The numeric quadrant in the outer circle will display the scaling factor.

An orange dot at the 1 position indicates the middle setting. Turning the main rotary will either render a red bar up, or a green bar down, depending on the turn direction.

Note that the map factors may also be accessed directly from the MAP mode. Use the main rotary encoder to modify the respective value.

STEP EVENTS

Steps may be used to generate so called events. Events are automated changes that happen at runtime.

GENERAL DEFINITION

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 maps for details.

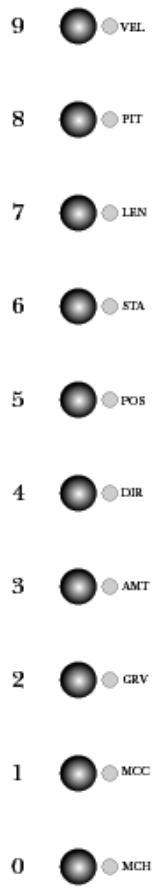
CREATING EVENTS

To create an event, double click on a step to zoom into it, and select one of the attributes in the SEL column. As discussed earlier, initially these are all lit, waiting to be selected. Once selected as an event, they will blink. You will notice that some are coloured orange, some green. The orange attributes indicate that their events will influence the attribute map factor, while the events for the green ones will change the attribute value directly.

SET EVENT VALUES

The amount (AMT) value of the step determines the change in the track attribute every time the step is played. In case 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 range. Those values are 17 for each of the attribute map factors, 16 for DIR and POS, and 32 for MCH.

To change the size of the interval used by events, proceed as follows:

Go into STEP mode, i.e. zoom into your respective step. Activate an event and you should see the current size of the event interval for the selected attribute displayed numerically in the numeric field of the outer circle. Use the main rotary to adjust it to your desire.

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.

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 and pressing the flashing SEL attribute button so it is solid orange or green again.

NOTE ON 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 map 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!

THE EFFECTOR

One mutator button was not mentioned yet, and that is the EFF mutator.

WHAT IS EFF?

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.

Some additional explanation is needed here, so let's start with the theory.

In each 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.

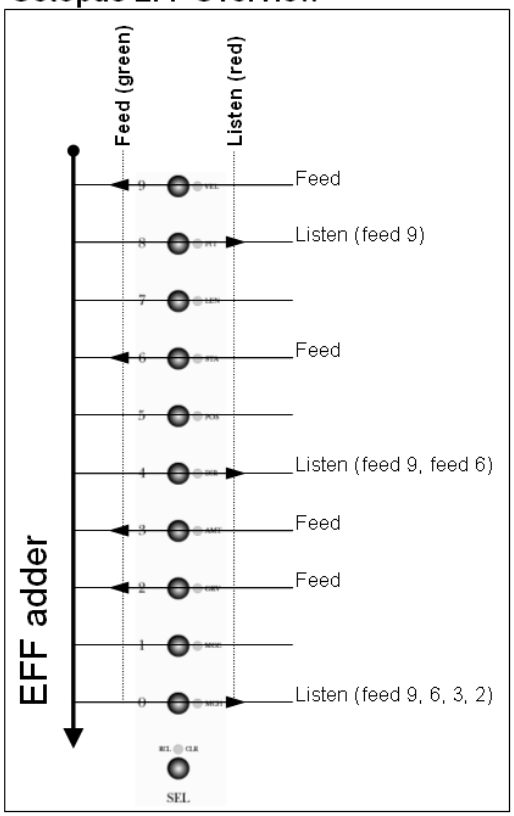
Modulation here refers to projecting Step attribute offsets from one track to another at a time at which the modulator track is being played. The affected Step attributes are Step VEL, PIT, LEN and MCC.

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 index. For example, track 9 may modulate all other tracks but track 0 cannot modulate any other track.

Octopus EFF Overview



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 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 EFF

FEEDERS

On to the operation of the Effector. Setting a track to be a feeder is done by pressing its EFF mutator and toggling its EFF state to green. 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.

LISTENERS

In order to set a track to be a listener, click its EFF mutator to toggle it red. Pressing a red EFF button will toggle it orange, making the track a listening feeder.

LISTENING FEEDERS

A listening feeder gets modulated first and then amplifies the incoming modulation with its own effector feed. Pressing the EFF button will toggle it off, with the track not participating in Effector modulation.

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. Muting and un-muting feeder tracks is a quick way to introduce changes to a track and then to go back to the original sound.

EFFECTOR AT WORK

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 (this is essential) and build a pattern into it involving lots (if not all) steps. Make sure that step 1 is set as part of the pattern and play the pattern.

Now make this track listen to the effector by toggling its EFF mutator to red by double clicking on the EFF button.

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 below.

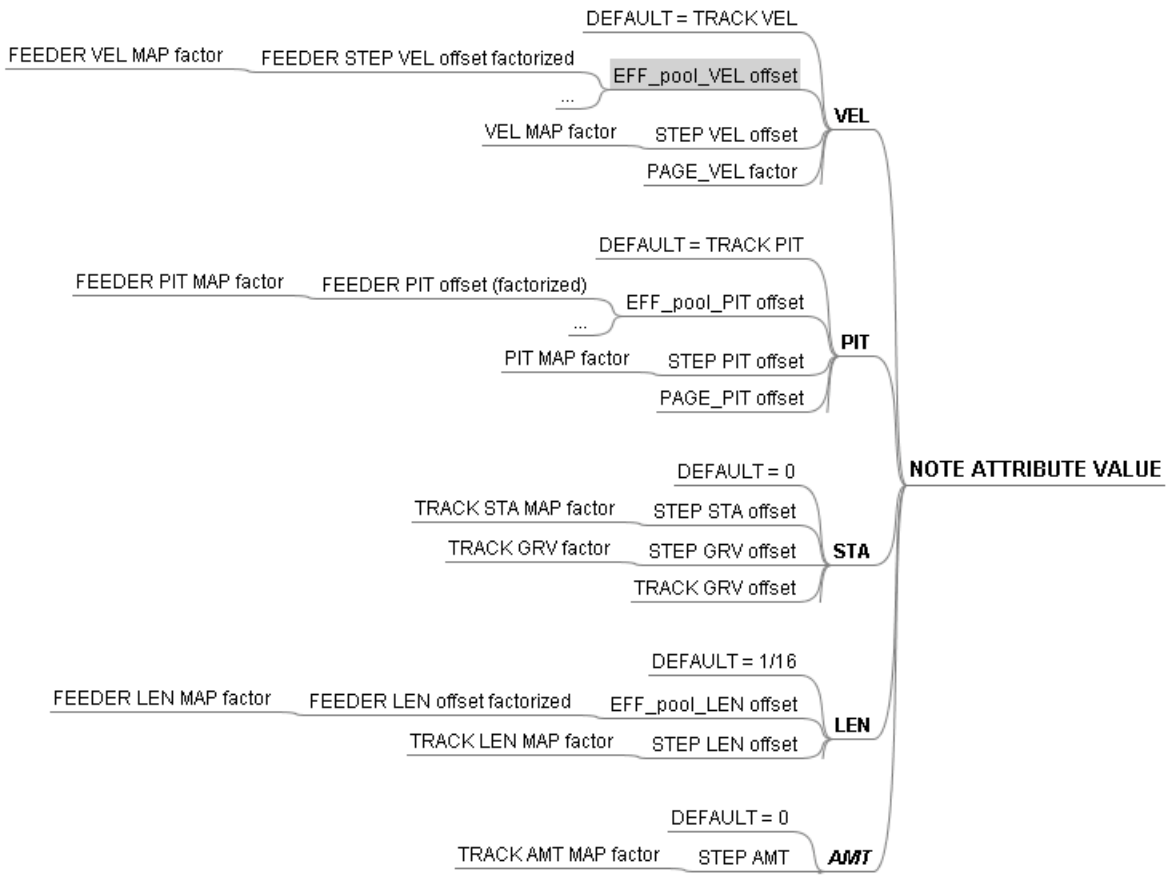
VELOCITY

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 -40 and +40 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

NOTE STREAM RECORDING

Octopus is capable of recording incoming MIDI note, MIDI controller and pitch bend data onto its tracks, at (sequencer) runtime, recording the data stream as it gets played on the Octopus MIDI in.

Note that pitch bend data is currently recorded using one value byte only, essentially mapping a 14 bit value to a 7 bit value.

While strictly track based, recording is polyphonic so that for example chords may be recorded in from an external keyboard onto a track. More on that in a second.

ARM RECORDING

You can enable MIDI recording from Page Mode while the Octopus is stopped or playing.

Simply hold a Track SEL button and press REC to arm 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, since it is a common error, make sure to send the MIDI data into the correct MIDI IN port on the Octopus, 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.

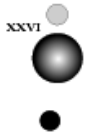
Playing chords directly on your keyboard will also generate a chord on the Octopus step under the chase-light, making it very easy.

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 note, that for chord recording the same restrictions apply as for building chords into steps – a chord cannot span more than one octave.

UN-ARM RECORDING

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



CONTROLLER STREAM RECORDING

Generally, MIDI controller data is recorded as it is coming in, similar to a note stream. 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 data.

AUTO-SENSING

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

A fun exercise may be to enter MAP mode and look at the MCC map while turning a knob on your controller and watch the MIDI CC input being recorded as it comes in.

CONSIDERATIONS

However, remember that a track may only play one controller at once. Therefore, if you have created a controller map for some controller and then operate some other controller, the map will play the controller data for the last auto-sensed controller. This includes the pitch bend, which is handled by Octopus in a similar fashion to a controller.

STEP-NOTE RECORDING

Octopus 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 as well.

OVERVIEW

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

ARMING STEP-NOTE RECORD

With no track selected, 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 external 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.

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.

CHAINED PAGE RECORDING

In complement to the above, you may record takes longer than 160 steps too, by using the page clustering function.

Simply cluster the necessary number of pages, set their track chain configurations, and enable in each of the pages the recording tracks.

Generally, when a recording track is part of a chain, the recording „lock“ (blinking red selector LED) will carry along with the chase-light in that track and also move from one track of the chain to the next.

Note that the Track DIR setting will be followed even during MIDI recording.

Try taking the output of another sequencer and recording it, while the Random or Brownian DIR is set. Interesting things may happen.

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.

DATA INTERVALS

There is a limitation on the range of data that may be recorded.

While the MIDI protocol allows for pitch and velocity values to be in the range 0…127, this range is constrained by the internal architecture of Octopus.

We will explain what this means using the example of PIT – the one you are most likely to first encounter in practice.

As you have seen in previous chapters, the pitch of a note played by Octopus is computed

as the sum of the track base pitch and the PIT offset of the particular step.

The track PIT value can be anywhere between 0 and 127, however the step PIT offset may be anywhere between -40 and +40, always taking the track PIT value as the reference point.

This means that the maximum possible range for pitch values in a given track is 81 semitones, or almost 7 octaves. However, this possible range may be reduced by the track PIT settings in the following sense:

For example, a track PIT of 100 will not allow you to record notes lower than 100 – 40 = 60. All incoming notes with a pitch below 60 will not be recorded on that track.

QUANTIZED RECORDING

In the section on attribute map factors, we have described the workings of the factoring mechanism. One application 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 map is not in effect.

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 CC map learn from the MIDI input.

ENTERING CC MAP MODE

Enter the CC map mode by going to page mode, disabling any recording mode if necessary, and double click on one of the CC map selectors (1-5) at the bottom of the matrix field.

ARM CC MAP LEARNING

While in CC map edit mode, press the REC key to arm the learn mode.

As soon as you press the REC key you will see that a red blinking light will appear in the selector column of the page.

SELECT TARGET

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.

UN-ARM CC MAP 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

While in page 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 – however note that this is only applying to note data, and not to other MIDI data, such as controllers.

EXTERNAL SCALE BUILDING

In the chapter on scales we have explained how to build and modify a scale. We have used the Octopus pitch circle to select the notes of the scale, or the base bitch of the scale accordingly.

You may do the same changes using an external controller, such as a MIDI keyboard.

ARMING SCALE REC

To do that, simply enter scale mode by pressing SCALE SEL, and arm the scale for listening to the MIDI IN by pressing REC.

All notes received on the MIDI IN will be interpreted in the same way that key presses in the pitch circle will be interpreted.

Also note that the incoming MIDI notes may come as well from virtual MIDI channels.

DIS-ARMING SCALE REC
Press the REC button again to dis-arm this mode.

EXTERNAL PROGRAM CHANGE

Octopus allows external control of page toggle states via program change messages.

The program change messages received will be interpreted according to the channel they arrive on. The MIDI port however does not matter.

ARMING PROGRAM CHANGE LISTENING

To activate program change listening, you need to go to grid mode and press the REC key. You will see it blink orange. Pressing it once again will switch the listening off again.

GRID SET SELECTION

Program change messages received on channel 10 will trigger grid set selections in the GRID. It is equivalent to pressing a grid set selection key in the matrix.

The grid set index will be computed as a modulo function of the incoming program change message.

For example, MIDI program changes 0-15 will select grid sets 1-16 respectively. A MIDI program change message of 33 will select grid set 2, which is computed as follows:
(33 % 16) + 1 = 1 + 1 = 2.

PAGE TOGGLES

Program change messages received on MIDI channels 1-9 will act as toggle signals for pages in the respective banks.

Let's take an example: a program change of 33 on MIDI channel 7 will toggle page 2 of bank 7.

If some page other than page 2 was playing in bank 7, page 2 will be activated for play and the previously playing page will be muted.

Similarly, if page 2 was indeed playing, it will get turned off and no other page in bank 7 will be playing.

XI GENERAL TOOLS

UTILITY FUNCTIONS

CHASELIGHT 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 ALN button.

This will re-synchronize all tracks to the Octopus 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 LOCK

Sometimes you may want to hide the Octopus 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 only the tempo LED will remain lit and blink at the rate of the internal clock. All other LEDs will be turned off, and seemingly all keys will be disabled. 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

MIDI CLOCK SELECTION

Per default, Octopus does not send or react to MIDI Clock information. This is simply to save bandwidth. However, Octopus may act as a MIDI clock source in your setup, or will synchronize to some other source.

The MIDI clock state is selected and indicated by the button / LED numbered “200” in the top part of the outer circle.

In general, 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.

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 Octopus state.

MASTER

An unlit clock indicator LED means that Octopus is not sending and not receiving MIDI clock information. Pressing the clock selector turns it orange – indicating that Octopus is sending MIDI Clock out both MIDI ports. Another press toggles it back to off (default mode).

SLAVE

A double click turns it green or red (more on that below), meaning that Octopus is now listening to MIDI clock and is acting as a MIDI slave. This is best remarked by noticing that no LED is blinking on the Octopus front panel. To exit the slave mode double-click the clock selector.

Change of clock selection (switching between master and slave mode) is possible only in GRID and PAGE mode.

Also, when Octopus 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 SELECTION

When in slave mode, Octopus will look to determine where the first MIDI clock message arrives. If it is on MIDI port 1, the clock LED will be green. If MIDI clock arrives on port 2, the clock LED will turn red.

Once a port has been determined, MIDI clocks arriving on the other port will be ignored.

Octopus will remember the last port that provided MIDI clock signal. Implicitly this means that when entering slave mode you may discover that the clock indicator LED is red, or green, one of which you may not be expecting.

SYSTEM LOAD HANDLING

The flexibility for composition offered by Octopus translates into possibly huge amounts of data being generated at a given time.

NATURAL BOTTLENECKS

This makes two natural bottlenecks visible: the bandwidth of the MIDI pipe and the capacity of the Octopus central processing unit (CPU).

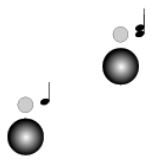
LOAD MONITORING / DROPPING

Octopus is built with timing stability in mind. However, too high loads of data would result in potentially massive glitches. To prevent that Octopus constantly monitors its load.

Should any of the two bottlenecks be full, load will start to get ignored. This is indicated to the user, which may choose to reduce load in general – or not, being aware of what is going on.

OVERLOAD SIGNALLING

The CHORD block of the panel is used to indicate overload or potential overload as follows:



CHORD

Overload on the MIDI1 port is indicated by a red lit CHORD1 LED. Overload of the MIDI2 port is indicated by a red lit CHORD2 LED.

What the lights really tell you is that the respective MIDI port pipe is too full to carry additional load, and some MIDI data was potentially dropped.

One way to work around this is to make sure you use both MIDI ports and distribute the load accordingly between the two.

CPU load is a bit trickier, since the CPU has many tasks to complete. For all practical purposes, CPU overload means that not all data may have been processed by the CPU in a timeframe that would allow timing to stay relatively stable (our subjective impression).

All data that was not processed was obviously ignored.

ADDITIONAL NOTES

You may observe at times that the CPU is overloaded while the MIDI pipes are not. This means that the CPU is busy doing stuff other than sending MIDI. One probable explanation is that you are probably making extensive use of the track speed multipliers.

For your understanding, a track playing at 4x speed uses roughly 3 times more CPU cycles than a track playing at 1x speed.

Before we get lost into technicalities – the CPU load is indicated in the CHORD3 to CHORD7 LEDs in two stages: stage one indicates that CPU is at about 80% load. This is shown by the CHORD3-CHORD5 LEDs being orange. Stage two indicates that the CPU is overloaded, indicated by CHORD6 and CHORD7 LEDs lit up red.

Again, this indicates that the CPU is not able to process all entered data in a time that guarantees timing stability within a certain tolerance. This is why you may see the CPU overload even at very low tempo values, if a big enough data stack awaits to be processed.

FINAL REMARKS

Note that the two bottlenecks are serially connected, CPU first, MIDI second. They also know of each other in the sense that if a MIDI pipe is full, the CPU will not process for it more data (it gets dropped anyways) until it sees that the data really gets sent out of the MIDI pipe.

This is to save resources for other tasks such as executing key presses, rotary turns, or display updates.

When Octopus is under very high load, you may possibly see slight glitches of the display.

For example, it may seem that the chaser light is not being moved correctly. This is just a visual issue and may occur because sequencer operations have higher priority than processing visual data.

SYSTEM DESIGN FLAW?

This leads us to our final remark, since this topic did raise some questions in the past: we are confident that the amount of resources available under the "clip" level is in no way representing a constraint, and we do not see an issue.

To translate into an analogy from the synthesizer world, we rarely see an issue if the number of voices available does not correspond to the number of keys on the keyboard.

By the same token, a synthesizer with a 61 key keyboard and polyphony below 61 is surely not subject to a flawed design.

INSTRUMENT STATE INTERNAL SAVE

Octopus can save the full instrument 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.

W A R N I N G:

PLEASE MAKE SURE THAT OCTOPUS IS NOT TURNED OFF OR RESET DURING THE SAVE OPERATION!

SAVING THE MACHINES 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.

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 the note inner circle, and operation completion is signalled by a complete circle.

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

THINGS TO REMEMBER

Some of this is repeating information, but it may be a good time to remember it.

You can always revert back to the last saved state by simply pressing the reset button found on the bottom pane of Octopus (just underneath the Tempo knob). This will clear all changes made since the last save operation.

If you power up Octopus while holding the CLR button, you will start without loading the saved state from memory, starting off with a virtually fresh machine.

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

EXPORT MEMORY CONTENT TO MIDI

Octopus 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 Octopus machines. Note however that there is no guarantee that the SYSEX dumps will work across OS versions.

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

To enter the EXC mode, press and hold GRID while pressing the green blinking EXC / ALN button. You should see the EXC LED turn orange and blink steadily.

To exit the EXC 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, while in EXC mode simply press the button of the page that you would like to export. Only lit matrix buttons will have an effect, basically preventing you from accidentally dumping empty 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 8 KB.

When played back to the Octopus, 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 the Octopus 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.

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 behaviour. 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.

DATA TRANSMISSION RATE

The throughput of SYSEX data may be adjusted, which is useful in cases where your external periphery needs a lower transmission rate than Octopus is potentially capable of providing. Obviously, a lower transmission rate will result in more time required by the dump to complete.

To adjust the transmission rate, you may turn the main knob to select a value between 10 and 100. Per default, the rate is set to 50. A higher rate indicates higher data throughput.

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.

OPERATING SYSTEM UPDATE

Once in a while, you will want or need to update the OS of your Octopus. This may be the case when we are releasing OS versions with additional built-in functionality.

NOTE: Please be aware that until further notice and unless otherwise explicitly advised, it is not possible to transfer / import machine states between different versions of the OS. Therefore, updating your OS will inherently mean that you will render your internally saved machine state unreadable.

The OS update procedure differs slightly between OS v0.98 and later versions, so we will start by confirming the OS version you are currently running.

CONFIRM CURRENT OS VERSION

To confirm the current OS version of your machine, you need to enter the machine system mode.

Entering the system mode is done differently on OS v0.98 and any OS v1.xx version, and may be a source of later confusion.

To begin, press and hold GRID and very briefly press the ESC button.

One of two things will happen: you will either enter system mode of OS 0.98, or engage the interface lock function of OS v1.xx. Telling the two cases apart is quite easy:

Scenario 1: the numeric field of the outer circle reads out the number 98. This is a clear indicator that your machine is running OS v0.98.

Scenario 2: all you see on the display is an orange blinking Tempo LED. This indicates that you are dealing with a OS v1.xx machine and have just locked its interface. Unlock the interface by double-clicking the GRID button.

To enter the system mode press and hold the ESC button pressed while you are performing a reset operation. Make sure to wait until the machine has booted up in system mode before you release the ESC button and carry on.

Coming from either scenario, you should now be ready to receive SYSEX files sent to the Octopus.

Before you continue, note that the update from OS v0.98 requires also the update of the boot-loader, as described in part 2/4. Updating from a later OS version doesn't require this step.

REQUIREMENTS

Now make sure that you have all that is required to complete the operation.

Up to three files are required for the update:

OCT_OS_UPDATER.syx
which is the OS updater utility,

OCT_BL_UPDATER.syx
which is the boot-loader configuration file (if you are running OS v0.98) named

OCT_OS_v100.syx
which is the new OS file to be installed.

The three files are available on our website and are in SYSEX (.syx) format, as handled by common MIDI archive utilities. Note that these are not the same as MIDI files, which normally come with a ".mid" extension.

Make sure to download these files before you proceed with the update procedure.

Furthermore, you will also need **a MIDI utility** (or device) that can read and dump SYSEX files to the Octopus.

Examples thereof are "MIDI-OX" for Windows and "SysEx Librarian" for MacOS X. Further information about these utilities is freely available on the internet.

UPDATE PROCESS OUTLINE

The update is a multi-stage process, including an update to the boot loader of the machine.

The sequence of required actions is outlined below:

1. Install the OS v1.00 updater utility on the machine.
2. OS v0.98 only: update the boot-loader.
3. Install the OS v1.00 file on the machine.
4. Boot OS v1.00 and reformat the memory.

The order of steps is crucial, as is their correct execution:

W A R N I N G:

WHEN WRITING TO FLASH, BE SURE TO WAIT UNTIL ALL LEDS OF THE INNER CIRCLE (16 OF THEM) LIGHT UP BEFORE YOU RESET THE MACHINE.

THIS IS ESSENTIAL FOR OS UPDATES!

THE LED CIRCLE ACTS AS A PROGRESS INDICATOR OF THE WRITE OPERATION.

IF THE OPERATION DOES NOT COMPLETE, YOU WILL END UP WITH OLD DATA ERASED AND NEW DATA NOT WRITTEN CORRECTLY.

THIS MAY RENDER YOUR MACHINE INOPERABLE.

1/4 INSTALL THE OS UPDATER UTILITY

NOTE: This chapter requires the file **OCT_OS_UPDATER.syx**

Enter the system mode.
On OS v0.98 you do this by holding the GRID button pressed and briefly hitting the ESC button.

On OS v1.xx versions you enter system mode by holding ESC pressed while you reset the machine. Make sure the machine has booted before you release the ESC button.

The readout at the top left of the circle should show you the version number.

Connect your SYSEX dump utility to the MIDI IN 1 on the Octopus. If you have the option, set it for 100ms delay between SYSEX packets, to be on the safe side. Refer to respective documentation of your MIDI utility, if required.

Start the SYSEX dump of the OS updater file **OCT_OS_UPDATER.syx** while in system mode.

You should see the Octopus matrix field counting up the LED's in green and the Program LED blink green as well. This should take on the order of 3-4 minutes.

Wait for the download to complete. Once the download is complete, the matrix field will get erased and the Program button will blink red, indicating that we may write the received OS updater file to flash.

Press the red Program button and wait at least 10 seconds. You also should see the inner circle light up in sequence, serving as a progress indicator.

With this operation complete, the updater has been flashed to the machine and should be ready to go.

NOTE:
We have observed that not all MIDI interfaces and not all set-ups may work equally well for the update procedure in general.

Should you experience difficulties, please make sure to connect your Octopus directly to the MIDI out of your interface without any intermediary devices. Another measure may be to try the procedure with an alternative MIDI interface, if available.

2/4 UPDATE THE BOOTLOADER*

**NOTE:*
The steps described in this section are mandatory when updating from OS version 0.98 to OS v1.00 or higher!

If you are updating an OS v1.xx to a higher version, you may skip directly to the next section – "3/4 Install the new OS file".

NOTE: This chapter requires the file **OCT_BL_UPDATER.syx**

Reset the machine to boot into the OS updater. The reset button is the big red button on the back of the unit. You will recognize the updater by the readout of 99 in the numeric field of the outer circle.

Since OS v1.00 has grown significantly over OS v0.98 (see release notes), the boot-loader needs to be refreshed as to accommodate the larger OS file. We will do this by updating the configuration file of the boot-loader.

Start the SYSEX dump of the boot-loader configuration file **OCT_BL_UPDATER.syx**, with the machine running the OS updater and the same MIDI connection as before.

You should see the Octopus matrix field counting up the LED's in red and the Program LED blink orange. This should take on the order of 40 seconds.

Wait for the download to complete. Once the download is complete, the matrix field will get erased and the Program button will blink red, indicating that we are ready to write the boot-loader configuration file to flash.

Press the red Program button and wait at least 10 seconds. You also should see the inner circle light up in sequence, serving as a progress indicator.

Make sure to allow the circle to fill up before you move on!

With this operation complete, the boot-loader configuration file has been flashed to the machine, and we are ready to install the new OS file.

3/4 INSTALL THE NEW OS FILE

NOTE: This chapter requires the file **OCT_OS_v100.syx**

Next, we will boot into the updater, with the refreshed boot-loader configuration.

Reset the machine to boot into the OS updater, as before.

Start the SYSEX dump of the OS v1.00 file **OCT_OS_v100.syx** with the machine running the OS updater and the same MIDI connection as before.

You should see the Octopus matrix field counting up the LED's in green and the Program LED blink orange. This should take on the order of 4-5 minutes.

Wait for the download to complete. Once the download is complete, the matrix field will get erased and the Program button will blink red, indicating that we are ready to write the OS v1.00 file to flash.

Press the red Program button and wait at least 10 seconds. You also should see the inner circle light up in sequence, serving as a progress indicator.

Make sure to allow the circle to fill up before you move on!

With this operation complete, the OS v1.00 file has been flashed to the machine.

4/4 REFORMATTING THE MEMORY

The first time you would turn on the machine after an OS up-grade you will have an undefined machine state. This is because the OS would load memory content that it does not understand.

You have to fix this by overwriting the memory with a clean state to fit the new OS.

This is done by booting the machine without loading memory contents, and then saving the clean machine state. We will explain this in more detail below.

NOTE: The CLR button referred to below is the 3rd button from the top in the MUT column, and is found between the Matrix and the LEN encoder.

CLEARING THE MEMORY

Turn the machine OFF, and wait about 5 seconds.

Press and hold the CLR button and do not release it until later on, when explicitly told to do so. This is important!

Turn the machine ON – and still hold CLR pressed.

Wait for a few seconds until the machine starts and you should see the PAGE mode LED blink orange. You have just booted into the new OS, without having loaded any memory contents from flash.

Release the CLR button, which should leave you with the mutator LED in row 7 lit red.

Press the CLR mutator button to toggle it off.

You now have a perfectly clean memory state which should be saved.

SAVING THE MEMORY STATE

Press and hold the GRID button. You will see the Program LED blink red.

Press the Program button and wait for the save operation to complete. Once completed, you should be back in GRID mode, with the GRID LED blinking orange.

The next machine start-up will load into this valid machine state. So for now, you may please conclude the update procedure by one final reset.

Reset the machine.

From here on, you will continue to work with Octopus as you have before – and try out the new functions of the new OS.

Congratulations, you have just taken your machine to a higher OS level!

XII RELEASE NOTES

RELEASE 1.00

The release of the OS 1.00 involved re-structuring the manual from scratch.

For that reason, you will not find any section pointers respective to the new features and changes.

In the following, we use the following mark convention: (***) for new features, (**) for evolved functionality, and (*) for minor changes.

FREE-EDIT TRACK CHAINING (***)

In addition to the preset chain patterns, Tracks in a Page may also be chained according to any other configuration desired or required by the user. This includes “overlapping” track chains, or structuring a page as a chain of 10 tracks for a total of 160 steps. Note that this involves moving the MIDI Clock select functionality to a different position – refer to the section on MIDI Clock for latest information.

TRACK PROGRAM CHANGE (***)

Tracks now retain the MIDI program change information as a track specific value. The program change message is sent whenever the Program key is pressed, or once – whenever the page of the PC-containing tracks is enabled for play.

EDIT TRACK DIRECTIONS (***)

Directions 6-16 are now available and freely editable by the user, including re-trigger and randomize options.

STEP GROOVE ATTRIBUTE (***)

A step may be delayed at playtime by a random amount of time in multiples of 1/192 of a note. This is controlled via the step groove attribute.

GRID-TRACK MODE (***)

The GRID mode can additionally be used to operate directly on the tracks belonging to pages that are playing in the Grid. Up to 90 tracks are mapped to buttons in the Matrix and act as virtual track selectors, allowing including mute/un-mute and editing of track attributes.

STEP-NOTE RECORDING (***)

Notes may be recorded directly on pre-selected positions in a page, irrespective of timeline and chase-light position. Works nicely with chords, too!

PAGE SCALE CAD (***)

Changes to a scale may be set to affect the pitch values of the tracks in the page. Whenever the scale is modified, the track pitches are aligned to the new scale, modifying the harmonic

structure of a page in a musical way.

VAST MIDI-IN CONTROL (***)

Apart from recording MIDI data, MIDI IN ports can be used to control various functions of the machine via MIDI IN signals. This includes selecting grid sets and toggling grid pages via program change messages, or even creating and modifying scales on the Octopus.

VIRTUAL MIDI CHANNELS (***)

Provide an internal wiring of tracks to the Octopus MIDI in. In this way, Octopus tracks may be used to leverage the capabilities of MIDI IN control, right on the Octopus.

MIX MAP UTILITIES (***)

The MIX MAP mode has been extended to include CLR, RND and ALN functionality. This is an efficient way of operating on the same attribute of all tracks at once, or changing the order of tracks according to values of a selected attribute.

MACHINE UI LOCK (***)

The machine may now be locked from curious, unauthorized button pressers. It will hide all visual feedback, not accept any key presses (with one exception) but play as normal.

MAP FACTORS (***)

Each relevant attribute map now has a map factor, which indicates the amount to which that map is applied to the current output.

EXPORT CONTENT TO SYSEX (***)

Memory content may now be exported as MIDI system exclusive streams, providing a means to store machine state data outside of the Octopus.

STA / LEN FACTORS (**)

The STA and LEN attribute values of Tracks are now assigned to influence the effect of LEN and STA maps on the steps played in a Track. They are now factors. The old functionality can be easily achieved by skipping steps.

STEP EVENTS AND FACTORS (**)

Step events modify the map factors for the tracks, and not the actual track attribute values.

PITCH BEND HANDLING (**)

Now pitch bend data can be recorded and worked with, similarly to any other MIDI controller data.

RECORD CHANNEL (**)

Recording MIDI in a track is restricted to the MIDI channel specified to the track that is being recorded on. This is more restrictive than in previous OS versions.

TRACK PITCH VIA MIDI IN (**)

Tracks may be assigned pitches directly from an external controller. Saves time when you are trying to make a certain note mapping.

TRACK FLATTENING (**)

The FLT mutator has evolved to new semantics. It is now applied to two or more tracks to create a „stacked“ version of that track selection into a single track.

NEW EFFECTOR STATE (**)

Tracks can now take on an additional state with regard to the Effector. In addition to being unaffected, a sender, or a receiver, tracks may now be receiving senders.

CC MAP LEARNING (**)

In addition to programming CC maps, you can now have them learn by listening to MIDI IN input. Saves time and comes in handy.

STEP ATTRIBUTE TWEAKING (**)

When editing a step attribute in map mode, the exact value for the edited step is shown in the numeric quadrant of the outer circle. This is particularly useful for visual fine tuning.

MIXER MAP MUTATORS (**)

The mixer attribute maps of a page can now be cleared, randomized, sorted, and copy-pasted across pages.

FORCE TO SCALE INPUT (**)

Externally played notes can be passed through the Octopus and forced to the scale of the current page.

TRACK SPEED MULTIPLIERS (**)

Octopus now features additional track speed multipliers. These include: 1.5 (for direct creation of triplets), as well as the following: 1/1.5, 1/8, 8, 1/16 and 16.

BANK CHANGE MESSAGES (*)

In addition to sending program change messages Octopus is now able to also send bank change messages.

PAGE SCALE PRIORITY (*)

Page scales are now prioritized over the grid scale, when both are in effect. This means that any page can now be exempted from being forced to the grid scale by simply activating its scale, and for example set it to chromatic, if need should be.

MIX ATTRIBUTE ASSIGNMENT (*)

The MIXER BLOCK can now be assigned an attribute in a much more direct way: hold the attribute to be assigned while pressing the MIX button.

RECORDING DISCARDS OFF-RANGE NOTES (*)

Notes from MIDI IN recording that were not in the proper data range are now ignored, as opposed to being ceiled to the range boundary.

GRID CURSOR REMOVED (*)

The grid cursor has been removed. This is easy on the eyes – it makes one blinking LED less.

PAGE ATTRIBUTE VALUES (*)

These are not new, but were hidden and not documented. The VEL attribute is a scaling factor applying to all page output, and PIT is another means of transposing an entire page.

PAGE MODE SINGLE STEP SELECTION UNCOVERED (*)

When only one step is selected in a page (in page mode), the VEL and PIT attribute values for the step are shown in the circles.

SYSTEM MODE (*)

There is an additional system mode, used to view the version of the OS, as well as to upload new OS versions onto the machine. It is entered by holding the ESC key pressed during the power-up of the machine.

RELEASE 0.98

STEP CHORDS

The chord functionality has been revised and reworked according to user input. Chords may now be directly programmed or recorded (see MIDI IN RECORDING) into a Step. The way it works is to simply double click on a step, hold the chord button down and dial in the pitches that should make up the chord.

STRUMMING

Programmed chords may be strummed up or down using one of nine global, freely configurable strum levels. Along with the obviously required setting for note start, a strum level includes settings for velocity and pitch as well as length.

STEP REPEATS

Step repeats are special case of strummed chords (in that there is no variation in pitch) and hence handled in a very similar fashion to how step chords are handled. There is one flag to be set to indicate when a step should play a chord or just repeat.

STEP EVENTS

An event is a programmed change of the attributes of a track and is attached to a step. All track attributes, except for Start and Length, may be modulated by events. To program an event, double click on a step, and select one of the attributes in the SEL column. The amount value of the step determines the change in the track attribute. Changes are currently made using modulo addition.

RECORDING MIDI

Octopus now features the capability of recording incoming MIDI note and controller data onto its tracks. Recording is polyphonic so that for example chords may be recorded in from an external keyboard onto a track. Also, MIDI Controller data is recorded as it is coming in, and the Track's MIDI CC parameters are auto-sensing the controller and the associated data.

MIX BLOCK TIMEOUT

When operating the MIX encoders in PAGE mode you will notice that the edited value will be displayed in its corresponding row for a brief period of time, after which a timeout mechanism will restore the regular content of the track. This is for better control of your value changes.

GRID MAPS

It is possible to use GRID CC Maps directly from within pages. This is particularly useful when you have assigned some contextually “global” mappings to your GRID CC maps and want to use them at any time during operation, without switching to GRID.

PLAY MODE

The PLAY mode provides the capability to try new things in a non-destructive way. Setting Octopus (and hence all playing pages) in PLAY mode is equivalent to taking a snapshot of it for later recall, should the results of your editing not be up to your expectations. Therefore, exiting the PLAY mode will restore the old state of the playing pages, and pressing Program will make the changes permanent.

PAGE LENGTH

When in GRID mode, clustering pages is a way to create structures spanning more than one page. The switch mechanism between or across the pages relies on an internal variable that we term the “page length”. In previous versions of the OS the page length was computed internally and not visible to the user, but user feedback suggested that greater flexibility may be achieved by user visible and configurable page lengths. Tried out, agreed, and made it just that.

GRID SCALE

By popular demand, the GRID now has the notion of a scale. The scale may be selected and composed in the same way as page scales. Activating it (hence forcing Octopus into the GRID scale) means that all note data generated will be in that scale.

KNOWN ISSUES

Below is a list of known problems at the time of writing. Having them on this list implies that we are working on remedy and will make this available to you in the coming releases.

Tracks in a clustered page always starts from step #1. If the track is shorter than 16 steps and/or has a DIR of 2, 3, 4, or 5, the last known position will not be maintained when the page is exited and then re-entered during cluster play.

WORKAROUND: n.a.
This is a question of whether to have musical structures generally play what is expected of them every time they get triggered or something that may be unexpected. There are for both pros and cons.

Pages automatically activate if they are part of a cluster. Normally, a Page needs to be activated after entering steps to have it play. However, if you enter a page at the end of a cluster and start adding steps, it automatically activates and plays as part of the cluster.

WORKAROUND: use a remote/unpopulated area of the GRID to compose your new page, and then use CPY and PST to add it to the cluster in the ready-to-play state.

Different offsets for objects may not be maintained. If a group of objects are selected and the values started out different, the difference is maintained while adjusting the VEL knob. However, once all objects reached the maximum value, the differences are not re-established when the VEL knob was adjusted counter-clockwise. In other words - the original offsets were lost as soon as the values reached a maximum (or minimum). This holds true for other attributes as well.

WORKAROUND: n.a.
This is a task on our to-do list closing in the near future.

When Octopus is turned on or reset, there is some scrambled MIDI data coming out of MIDI port 2.

WORKAROUND: n.a.
This is something related to the way the boot-loader and the hardware interact with each other. We have not yet investigated, but it does not indicate a malfunction of the Octopus per se.

LEGEND

ABBREVIATIONS

VEL Velocity
PIT Pitch
LEN Length
STA Start
POS Position
DIR Direction
AMT Amount
GRV Groove
MCC MIDI Continuous Controller
MCH MIDI Channel

NEG Negative
POS Positive

RCL Recall
CLR Clear

SEL Selection

ATR Attribute
VOL Volume
PAN Panorama
MOD Modulation
EXP Expression
MAP Mapping

TGL Toggle
SOL Solo
CLR Clear
RND Randomize
FLT Flip Track
RMX Remix
EFF Effect
ZOM Zoom
CPY Copy
PST Paste
MUT Mutator
ESC Escape

Pen. Pentatonic Scale
Whl. Whole Tone Scale

Maj. Major Scale
Min. Minor Scale
Dim. Diminished Scale
Chr. Chromatic Scale

MOD Modulation
SEL Selection
CAD Cadence

ALN Align
EXC Export Content

SYMBOLS

 One track of eight lines

 Two tracks of four lines each

 Five tracks of two lines each

 Ten tracks of one line each

 User defined chaining

 FOLLOW

 RECORD

 STOP SEQUENCER

 PAUSE

 START SEQUENCER /
PLAY TRACK at 1x speed

 PLAY TRACK at 2x speed

 PLAY TRACK at 4x Speed

XIII TUTORIALS

MIDI CC CONTROL

This section is based on forum posts and courtesy of Thomas Moravansky. Thank you Tom!

STANDARD IMPLEMENTATION

First, Octopus has a standard MIDI CC implementation that spits out a cc amount per step.

To set this up is a two step process. First, go into Track mode and set the MIDI CC (MCC) to a particular controller number. Next, either zoom into a particular step or else bring up the Track Attribute Map for MCC by pressing the MCC Selector button then pressing ZOM to bring up the MCC map.

Set the MCC amount for any step or steps in the track and as the track plays, you'll hear the MIDI cc affecting your sound (assuming you remembered to set your synthesizer or sound source up to respond to that MIDI CC message).

REALTIME MIDI CC

In addition to this method, Octopus gives you real-time control for sending MIDI cc data.

Using the MIX knobs in Page mode, you have control of up to 10 different MIDI cc streams PER MAP PER PAGE. That means with the touch of a button, you have control over 50 MIDI CCs on a page.

To set this up, in Page mode select a Page that has some active steps. Double-click on the MAP 1 button under the matrix. You should see 3 SEL buttons light up (AMT, MCC, MCH) and one (AMT) should be blinking.

For this tutorial, skip changing the AMT and press the MCH button. This allows you to set the MIDI channel for each knob.

Note that the MIDI channel selected here does not have to match the Track channel. The knobs are completely independent of the Tracks.

After setting the channels, press the MCC button. This is where you set the MIDI cc number for each knob. ESC out and try it.

With the sequencer running, start twisting the MIX knobs and listen to what happens. You should hear the MIDI CCs having an effect on the synthesizer.

Now try this: Go back to Grid mode (press the GRID button). Turn on Page Clustering (press the SEL button for that row turning the LED green). Activate a second page next to the current one by double-clicking on the next button in the same row. Program some steps in that page as well. Go back to Grid mode.

When the sequencer starts, you should see the two adjacent Page LEDs changing as first one page is played then the next. For now, turn Follow off (green LED) and go back into the first page you set up (with the MIX MIDI cc knobs).

Start the sequencer and watch as the chase light plays this page and then disappears while it plays the second page in the cluster. Now try turning the MIX MIDI cc knobs.

You will find that the MIDI cc changes will have an effect even if the Octopus is playing another page in the cluster. This allows you to make real-time changes to a track or tracks even if you have many pages clustered together.

INTERESTING SIDE EFFECT

There is an interesting and useful side effect to this behaviour. If you set up different MIX mode cc maps on different pages, they will only be active when that page data is displayed in the matrix.

So, by turning Follow on and off, or by leaving Follow off and directly selecting pages with a double-click, you can freeze different pages (and hence different MIDI CC maps) in the display. This gives you quick access to a lot of MIDI cc potential while the song is playing.

Also note that each page allows up to 5 cc maps to be defined and the currently selected map is saved with each page so you can have Page 1 with map1 selected, Page 2 with map 2, and Page 3 with map 5 selected and the display will update accordingly with each page change.

BANKS

Finally Octopus has a setup for banks (a row of pages) to let you make some global changes to a group of pages when you're in Grid mode.

That frees you up from being on a specific page, but it constrains you to a specific set of MIDI controllers at that point (although you can still have 5 different MIDI maps and switch between them using the row of buttons under the matrix). You set up the MIX knob functionality for the Grid CCs the same way you did for Pages.

LFO-TYPE MODULATIONS / SUPERSTEP

This section is based on various forum posts and courtesy of Tom Moravansky, Duncan Goddard, and others.

GOAL

Octopus provides on-board tools to create modulations similar to both LFOs, and the famous Supersteps featured by the Latronic Notron sequencer. Although the capabilities of Octopus go quite beyond that, we describe here how to instantiate that particular behaviour on the Octopus.

GENRAL REMARKS

This tutorial is focused on the application of modulation techniques using MIDI CC data.

The same techniques apply to modulations of targets such as velocity, pitch, step length and others, possibly in the conjunction with the Effector. Therefore, the described techniques are explicitly not restricted to MIDI CC in any way.

BASIC SETUP

1. Switch to page mode. In the page, choose a track and set it up to send out MIDI CC data on a chosen CC# and a chosen MIDI channel.

2. Zoom into the CC map of your chosen track, where you will be able to draw or program the desired "shape" of the modulation.

3. Set the appropriate speed relation to other tracks (to get a higher resolution of sending out the data) on the same MIDI channel.

4. Use the remaining tracks of the page to create the musical sequence you would like the modulation applied to. It is important however that you set the note-holding tracks to the same MIDI channel as the modulator track in order to hear its effect.

MODULATION PERIOD

The period of the modulation can be adjusted by various means.

These include modifying its shape, adjusting the length of the host track (skipping some steps towards the end, or anywhere for that matter) and modifying the tempo multiplier of the track.

Finally, you can use track chains to create modulations that span more than 16 steps.

ADVANCED USE

One can argue that you would block one or more tracks just for this purpose. While this is true, let’s assume you use two tracks

for modulation – that still leaves you with 8 other tracks for composition, in this page. But remember that you can have 9 concurrent pages.

Further on the bright side, you are able to modify and interact with the CC modulators as you would with any other track or object.

You can also have these modulators evolve and change over time, using step events for example.

Last but not least, you can modify the modulators on the fly, during performance, giving you capabilites at hand which are yet to be matched.

The following section is based on a user report on how this all worked out in practice with regard to emulating Notron Supersteps. The text was only slightly adjusted for consistency with the current OS level.

CAN IT BE DONE?

The short answer is yes, you can do it and fool anyone into thinking you have a Notron running with Supersteps.

TEST CONDITIONS

I limited my test to sending CC #7 since that's very obvious to hear and pretty much every synth responds to that.

Setup - test synth – Alesis Ion. I used a Notron to generate the note on and the CC #7 values.

The shape was a simple repeating triangle wave. I used the Octopus to record and then play back the info. A MIDI patch-bay and a PC running MIDI-Ox completed the setup.

Both the Notron and the Octopus were set to 120 BPM. Notron was set to a single 16 step element with a single note on at step 1 and the note length set to keep the note sounding for approximately 15.5 steps (just enough to get the note off before the element looped).

Good info to know for hardcore emulation - the Notron changes the CC resolution based on the tempo. Running at 120 BPM and having almost a 16 step note on yielded about 60 CC events. So I decided to record into the Octopus for 4 tracks (64 steps) of CC data.

OCTOPUS SETUP

Chain mode 3 (2 sequences of 4 tracks). Set Rows 6,7,8,9 to x4 speed. Select track 9 for recording (automatically enables tracks 6, 7, and 8). Start Octopus recording of CC data. Stop after one complete pass.

Delete any note ON's recorded in tracks 6,7,8,9. Turn step 1 of track 5 on and set the pitch to whatever you want.

For now, set the note length of that step to 1 less than 'sustain'. Set the length of tracks 2, 3, 4 to 0.

Press play and you now have basically an exact duplicate of the Notron sending MIDI CC #7 Supersteps.

VARIATIONS

Variations on this theme - reduce the note length on step 1 and add more notes in track 5 with varying lengths. Nice.

Shorten tracks 6,7,8,9 to get a different variation. Nice. Un-zero track 4 and add notes there. Nice. So that's how you do it.

More caveats - changing the MIDI CC should be easy (edit the CC value for each of track 9, 8, 7, 6). Also, changing the shape requires re-editing the CC map data.

For slower tempos, you might be able to get away with x2 recording speed (or use x4 for more resolution). Either way, you're playing on the fact that the target synth can only respond so fast and therefore any minute differences between the Notron data and your Octopus data will be minimized.

THE BOTTOM LINE

Like I stated at the top - at first I thought this was just going to be an academic exercise, but it turned into a useful technique leveraging the unique strengths of the Octopus.

So far I haven't even tried using other speeds on the controller tracks; it's been fun using x4.

Since there is a range of speed multipliers and you have control over the length (amount) of controller data, there is a lot of flexibility in this approach that should give you cool results at any tempo or note length.

Probably to minimize the amount of rework, you could record a full 1x8 (128 steps) of controller data and then adjust the note length, speed multiplier, and controller chain length to get a variety of effects from the original CC data.

The fact that the Octopus lets you record/create a block of modulation data and allows separate speed control over it opens up a new avenue of note and controller interaction.

Enjoy!

DIRECTION EDITING

Let's start with an empty page so there's no distraction. Select an empty page and zoom into a track (use 9 for this example).

GETTING PREPARED

Use the DIR edit knob to select direction 6. Double click on the DIR Selector button. While the below may be carried out with the sequencer running or stopped, we recommend you stop the sequencer to minimize distractions while editing.

You should see a flashing DIR SEL LED, a flashing LED in row 0 (indicating the time slice or position to be edited), and a solid orange LED in step 0 (the direction map you are editing – 6 in this example).

STEP DOUBLE-PLAY

Let's start with a simple variation - have steps 1, 5, 9, and 13 play twice.

Select slice 1 in row 0. The red LED in position 1 of row 1 indicates that when the first position is played, step 1 triggers. We want step 1 to trigger twice, so toggle position 1 of row 2 on. Make sure the LEDs in all other rows are off.

Now click on button 5 of row 0. You should see a similar situation - position 5 of row 1 is on - toggle position 5 of row 2.

Repeat for steps 9 and 13. Slow the tempo way down and start the sequencer - you should see it 'pause' on steps 1, 5, 9, and 13. It is actually playing these steps twice.

You can exit out to Page mode, activate some steps on Track 9 (including steps 1, 5, 9, and 13), and listen as it plays.

Notice also that since you added 4 step triggers (doubling steps 1, 5, 9, 13), at the end of 1 pass, that track will be 4 steps behind the rest of the sequence (i.e. - when it cycles back to position 1, the rest of the tracks will be on position 5). This is either good or bad, depending on what you wanted to do.

One way around this is to mute steps 14, 15, 16 and set step 13 to only a single trigger to get back to 16 steps per cycle.

If you know you're going to truncate the sequence, you don't have to program stuff in the steps you'll be muting. If this is part of a larger chain of tracks, you can always mute steps in the other parts of the chain to get back to a multiple of 16.

Since you are modifying the directions steps play in, you cannot create a sequence of less than 16 triggers using the direction editor. You need to

use mute/skip steps to reduce the number played on each slice.

DOUBLE-PLAY VARIATION

Go back into direction editing for direction 6 on track 9. Edit slices 5 and 9 and toggle off the red LEDs in rows 1 and 2. Watch as the chase-light jumps around whenever it hits steps 5 and 9. Since no LEDs are on in any rows for steps 5 and 9, Octopus picks a random step to go to next.

PLAYING TRACKS INSIDE OUT

The next example is more involved. The goal is to play the track from inside out.

Stop the sequencer, clear the extra toggles from positions 1, 5, 9, and 13.

Press button1 of row 0. The plan is to have the sequence start from the middle (position 8) and alternate sides moving towards the end positions (1 and 16). After reaching the ends, it will reverse and go back to the middle. Remember - row 0 is the index for which positions(s) to trigger at each slice of time.

So, for slice 1, toggle position 8 in row 1 and position 9 in row 2. This means when the sequence starts, it will play step 8 then step 9.

Press button 2 in row 0. Toggle position 7 in row 1 and position 10 in row 2. Continuing:

Button 3,
position 6 in row 1, 11 in row 2;

Button 4,
position 5 in row 1, 12 in row 2;

Button 5,
position 4 in row 1, 13 in row 2;

Button 6,
position 3 in row 1, 14 in row 2;

Button 7,
position 2 in row 1, 15 in row 2;

Button 8,
position 1 in row 1, 16 in row 2;

Button 9,
position 1 in row 1, 16 in row 2;

Button 10,
position 2 in row 1, 15 in row 2;

Button 11,
position 3 in row 1, 14 in row 2;

Button 12,
position 4 in row 1, 13 in row 2;

Button 13,
position 5 in row 1, 12 in row 2;

Button 14,
position 6 in row 1, 11 in row 2;

Button 15,
position 7 in row 1, 10 in row 2;

Button 16,
position 8 in row 1, 9 in row 2.

Exit out to Page mode.

Select the default track chain of 10 separate tracks (XXIX). Press

Play and adjust the tempo to see the effect.

If you keyed it in correctly, you should see the chase-light for track 9 start in the middle, bounce to the end and then go back to the middle.

For an even more striking effect, edit the direction for all 10 tracks to use direction 6 and crank the tempo to the maximum.

While you're here, try other track chains. XXX and XXXI in particular play out nicely with this pattern.

RANDOM STEP SELECTION

One last thing to mention about steps – if no position is toggled in any row, the trigger for that time slice will be selected randomly by Octopus.

In a sequence, if you have a random step, Octopus will play normally until it hits that step. At that point, it will jump to some other position for the duration of that step.

CERTAINTY_NEXT

Now let's play with certainty_next. Go to track mode, select direction map 7. Click on button 1 of row 0 if that's not selected. Notice in the outer circle, where tempo normally is located, the 100 position is lit. This indicates a certainty that the next step will be step 2 of 100%.

Set each slice's certainty_next to 0 by selecting it in row 0 and then double clicking on 100. Press play - notice that the sequence is now playing backwards. (16, 15, 14...1).

To prepare for the next example, either reset the certainty_next value back to 100 (single click on 100) or use a different direction pattern (for example, 8).

BROWNIAN MOTION

If certainty_next is not 100 or 0, Octopus will decide whether to play the next step or the previous step based on the percentage set for that step.

If certainty_next is 90, then approximately 90% of the time Octopus will play the next step and 10% of the time it will play the previous step. This is how the Brownian motion preset direction is created.

TRACK SINGLE TRIGGER

The last few hints and tricks also involve certainty_next.

If you put a step with a certainty_next set to 0 in the middle of other steps with certainty_next set to values above 0, the track will get stuck at that point. This may be what you want sometimes.

For example, using direction 7 with all slices set to 100% certainty_next, change slice 9 to have certainty_next set to 0.

Exit to Play mode and start the sequence running. As soon as step 8 is completed, it will play step 9. Step 9 says to always go back to the previous step (step 8). So after step 9, it plays step 8, then 9, then 8, and repeats this forever. This leads to a couple of interesting ideas.

INFINITE LOOP AND BACK

You can create a random sequence with just 2 slices. Set slice 1 to be random (no rows toggled on). On slice 2 toggle position 1 in row 1 on and set certainty_next to 0%. Now when the sequence plays, it will keep selecting random positions.

You can use either the infinite loop from above or the randomization in a live setting by muting the 'special' steps and then un-muting them when you need the special effect. If you get tired of the infinite loop, you can just mute the steps again.