

# Octopus Release Notes & User Guide

*Community Edition - Operating System version 6.0*

## **Cuttlefish**

### **Disclaimer**

The Software is provided "as is," with all faults, defects and errors, and without warranty of any kind.

This version is backward compatible with grids saved in version 1.6.2 and 5.25.

A grid saved in version 6.0 may not work correctly if it is used with older versions of the OS.

### **Contributors**

- Eric Ellis

### **Feedback**

We are a small group putting our best efforts together to code, test and document the OS development. Your feedback and involvement are most welcome so please join us on the forum if you have any issues, questions or suggestions. We thank all of you who have taken the time and trouble to get involved!

### **Installation**

- Follow the usual process of installation via USB.

[http://www.genoqs.com/wp-content/uploads/2015/01/OCT\\_USB\\_Update.pdf](http://www.genoqs.com/wp-content/uploads/2015/01/OCT_USB_Update.pdf)

- OSX Sierra users please see an addendum to the USB update guide  
[http://forum.genoqs.net/wp-content/uploads/wpforo/default\\_attachments/1591205843-USB\\_OSX\\_Update.pdf](http://forum.genoqs.net/wp-content/uploads/wpforo/default_attachments/1591205843-USB_OSX_Update.pdf)

## New Features

### Anti-Echo - Disable MIDI Note and MCC Playback During Recording

Press the MAP button while in either Grid View, Page View, or Solo Recording View to toggle Anti-Echo. A blinking LED indicates that Anti-Echo is enabled -- the machine will echo back. This feature is useful when playing an external sound module that is also a MIDI controller, i.e. a synthesizer keyboard that is set to "local controller on". To set the global default, restart the machine holding ESC to enter the Device View. The MAP button will toggle the machine's default value.

### Track Record-Selected Recovers After MIDI Channel Change

While in Page View, when a track is armed for rehearsal or recording the track will remain armed when the MIDI channel is changed.

### Double-Click Stop at Startup to Mute all Pages

When the machine has just started up before play has been pressed, double-clicking the STOP transport button will mute-toggle every page in the grid and will mute every track on every page.

### Page Cluster Move / Clear / Copy

While in the Grid View, press and hold the first page in a page cluster. While still pressing the first page, press the next adjacent page to select the entire cluster. This will cause the page cluster to flash indicating a selection. The matrix location in the grid that you press next will move the cluster to that position, potentially deleting any existing page or cluster beneath it.

When a page cluster is selected, the CLEAR and COPY buttons are enabled. To clear the cluster, press the CLEAR button followed by pressing any page in the flashing cluster. To copy, press COPY then press the destination grid matrix location where the beginning page of the cluster should be placed.

A single page may be selected by pressing and holding the adjacent empty page on either side and then pressing the desired page.

If a selected page cluster adheres to the Solo Recording track layout the Pause transport LED will flash. Pressing PAUSE will enter the Solo Recording View with the selected page cluster set as the recording/overdub cluster. The Solo Recording track layout requires that there be zero or one track-chains on each page of the cluster and the track chain must end on the bottom Zero track.

### Grid Scenes as Drum Machine Controller

When in Grid View, row zero grid selection scenes are now able to send MIDI notes on-the-measure to control a drum machine or any device that is responsive to MIDI notes. Double click the "Row 0" MCH button. The led will blink red. Press and hold the MCH button and use the MCH rotary knob to set the note out MIDI channel. The channel is global for all scenes.

Press a step in row zero, it will flash orange. While holding the MCH button, use the PIT encoder to set the MIDI note pitch value. This will be shown in the note circle on the right.

## Send Arbitrary MIDI Change Control Events

The Octopus is now able to send arbitrary MIDI CC messages by pressing the MIDI MAP buttons, labeled 1, 2, 3, 4, 5. To use this feature, you will first create an event using the traditional mechanism.

1. Find an empty page in the Grid, toggle it on, and enter that page in Page View
2. Double-Click to enter the top track using the button labeled VEL
3. While in Track View, turn the right side knob labeled MCC/CPY to assign the MIDI CC parameter number
  - This will set the MIDI CC parameter number for all subsequent steps of this track
4. Press ESC to return to Page View
5. Toggle on, the first step of the first track and double-click to enter Step View
6. Use the MCC/CPY rotary knob to set the value to be sent with the MIDI CC event
7. Press ESC to return to Page View
8. Press PLAY to start the sequencer
  - When the step is played it will issue the MIDI CC event

You may add only one additional step to the first track at step position 2 to issue more than one event. The second MCC event will be sent a moment after the first event, indicated by a flashing LED. As an example, this may be used to start and stop tracks on the Boss RC-505 or to issue a bank change to a synthesizer that pre-dates MIDI 1.1.

After you have created your MCC events, the next thing to do is to assign the entire track to one of the numbered MIDI MAP buttons. In Grid View, the lower-left MIX button will toggle the behavior of the MIDI MAP buttons. Select the MCC event page that you created earlier by selecting it in the Grid (described earlier in the section Page Cluster Move). You will see the page flash. Now press the numbered button that you would like the MCC event(s) to be assigned to. Once this is done, you may delete the event page that you created.

When the machine is stopped, pressing an event assigned MIDI MAP button will fire all MCC events of the track in order and will toggle the button LED to on. The on status does not affect whether the event is sent, it is just a hint for use with machines like the Boss RC-505 which uses the same MCC event to both start and stop.

To clear a button assignment hold the CLR button and press the numbered MIDI MAP button.

When the sequencer is playing, pressing an assigned MIDI MAP button will cause it to flash and will fire the MCC event(s) at the beginning of the next measure. If you would like to change the on/off status while only sending the event once, simply press the button twice before the end of the current measure.

## MIDI Channel B Priority Switch

Restart the machine holding ESC to enter the Device View. Press the SCALE select button to toggle the MIDI B priority switch. MIDI channel B will receive and send MIDI data before channel A. This setting is saved to the Grid. SCALE select LED-lit indicates MIDI B priority.

Tip: This can be useful if the machine is running as a MIDI slave controlled by a DAW. The DAW can send the MIDI clock to channel B. Additionally, the MIDI clock and transport events can be sent from channel B to timing-sensitive machines such as a drum machine.

It should be noted that having either channel A or B priority does not imply that the machine introduces clock or event jitter, or is in any way unstable. This is simply a way to manage event-queueing growth and delay as new steps and MCC events are added to a song. You may want your clock and percussion to play consistently at the same predictable time, regardless of what you record and play on the machine.

### **Grid View Default at Startup Switch**

Restart while holding ESC to enter Device View. Press the flashing GRID button in the Mode area. This will toggle the default view at startup. When the machine is started you will be placed in Grid View rather than Page View.

### **MIDI Record Latency Adjust 1-5 STA**

Restart while holding ESC to enter Device View. Press the MIDI MAP buttons, 1 through 5, to set the default MIDI record latency offset. This will apply a negative step STA value to incoming MIDI notes as they are recorded to compensate for external hardware delays. Depending on the machine tempo, each increment is approximately one millisecond. This is meant to correct note timing, such that a note event at clock 0' on an external machine will be recorded on the Octopus at STA 0.

As a practical example, you may have a MIDI controller that plays an arpeggiator and you want to record the notes into an Octopus track with the correct STA value. Without Latency Adjust you will likely see that your notes are recorded at STA 2 or greater.

Latency Adjust is also available in the Solo Recording View.

## Solo Recording (MIDI Looper)

To enter Solo Recording View, stop the sequencer and press PAUSE while in Grid View. Press ESC to exit Solo Recording.

Solo Recording is a new recording paradigm that allows you to record across a single page cluster while other pages in the grid are muted. Like most DAWs and unlike a traditional mixing console, you may also select existing pages to play along while you record.

### Create a Recording

The MCH rotary knob will set the MIDI channel for an entire recording. First, select a single page or a series of adjacent pages to record into. To do this, press and hold any empty page in the grid that is not adjacent to an existing page. This will cause Grid row zero to display the measure count of your selection. In row zero, the page number below the bottom row indicates the number of measures that you will have available in your current held page to record into, i.e. the length of the track chain for that page. Once the page recording length is selected your recording page will be enabled. Press the page again to show the measure count. You may change the length while the recording is empty. To record across multiple pages, press the next adjacent page to the right, and assign a measure count.

Clear the page cluster by holding any page within the cluster and pressing the CLEAR button.

Press an existing page and it will flash to indicate that it will play along as you record. In the Solo Recording View, the existing page clusters will not advance to neighboring pages.

### Sequencer Capture Record Mode

The CHAINER button (XXIX) is used to toggle between standard human interface recording and optimized sequencer capture recording. This mode is useful if you have a pre-recorded sequence or arpeggiator being played on an external device that you would like to record verbatim for a specific number of bars. When activated, you may also want to toggle off the First Note Positive STA button.

### Transport Controls

Once a recording page (or cluster) has been enabled many of the transport controls will become available. Other controls will become available when the recording page(s) contain recorded steps or MCC data.

The primary PLAY button will enter a rehearsal which will either start the sequencer if stopped, or disable recording while the sequencer is playing. Double-click PLAY to save the current recording to the undo buffer.

The second PLAY button (XXII) will set the loop behavior. Green will continue to loop the recording in Overdub mode after the recording measure length has completed, i.e. the track chains. Red will stop recording after the measures have completed.

The third PLAY button (XXI) will set the end-of-recording visual cue flash mode.

Orange will flash the Chord LEDs on the final measure. Green will flash 3,2,1 on the final three measures, and red will disable flash.

The RECORD button, if there is no existing recording, will play the sequencer in a measure-hold on the first measure. Playing a note or MCC data will break the measure hold and begin recording immediately. If there is recorded data, RECORD will enter overdub. You may also press PLAY at any time to rehearse. If the sequencer was previously stopped and RECORD is pressed, there will be one count-in rehearsal measure before record is automatically engaged. At this time the MIDI transport START message will be sent to external devices. Another way to delay and begin recording at the start of the next measure is to press and hold PLAY while you press RECORD.

The PAGE FOLLOW button (XXVII) sets the Overdub mode. The default orange LED behavior is normal Overdub. Flashing red will indicate Punch mode. Punch-Overdub will overwrite an existing note rather than combine it into it as a chord.

The X button (XXVIII) will clear the recorded content of the pages.

### Grid View Modes

There are three grid view modes, indicated by the SEL button. Red is the default Bird's-Eye view. In this view, you will see pages in the record cluster flash when they are playing, and row zero will indicate the current measure. While the machine is stopped, you may press and hold a page to preview the recorded notes. Hold a page while pressing PLAY or RECORD and the sequencer will start from that page.

Hold a page and press the PAGE button to Page Warp into Page view. ESC will exit Page View and return to Solo Recording View. Returning from Page Warp will overwrite the undo buffer for that page, so any change made will be permanent; including any effects such as quantize. Be mindful and apply your effects after Page Warp to avoid inconsistencies across recorded pages within a cluster.

The SEL LED orange indicates the Solo Page View and will display steps in the matrix. In this view, you may press step buttons to delete them. The EDIT button when lit green will undo the most recently deleted step. If pressed a second time it will undo all recent changes.

SEL LED flashing orange will show the MCC View used to monitor the recording of MIDI continuous controller data.

### Misc. Capabilities

The TEMPO button is used to toggle Slow Tempo. This will toggle the tempo between its current BPM and half the current BPM.

Panic: Press and hold the MUT button while the machine is stopped. This will flash the STOP LED. Pressing STOP while holding MUT in this way will send a special all-notes-off with reset to the current MIDI channel. To avoid overloading the MIDI channel only 1/8 of the note-off events are sent with each press, so you may need to do this up to 8 times to silence a badly behaving external machine.

Solo Recording will automatically end long-held notes when either STOP is pressed or the recording has completed. This will prevent hanging notes and clipped notes.

Anti-Echo and Latency Adjust are both available in the Solo Recording View.

The MAP0 button will toggle MCC recording enabled.

The ATR and VOL buttons are used in Solo Page View during record playback to nudge a step forward or backward. Hold ATR and press a step that you would like to move left, or VOL to move right. A nudge left will set the step STA to +5 and nudge right will set the STA to -5. While the sequencer is playing long sustain notes that are nudged will play temporarily as short notes until the sequencer is stopped and started again.

You may save a page cluster recording and copy it to a new adjacent recording, while the machine is playing. Press the TRACK button to “create a copy of the track”.

Mute: To mute the playback of recorded notes, press the MUT button so that it flashes red.

A quick way to switch to different Solo Recording page clusters is to press and hold any page in the grid (that is in the Solo Recording format) other than the current Solo Recording page cluster. The PAUSE LED will flash. While still holding the grid page, press PAUSE to switch the Solo Recording view to the new page cluster.

### Footswitch Program Change Controller

An external footswitch MIDI controller may be used to control basic Continuous Play Recording functionality. This is expected to work with a footswitch that only sends the MIDI program change events up and down. The MIDI Mouse by Tech 21 was used during the development of this feature.

To enable an external Program Change controller, enter Device View by holding ESC while restarting, then press the RECORD button so that it is flashing.

The machine will only respond to a footswitch when recording fixed measure page clusters.

- Double-Press down, to silence all machines (same as STOP without stopping)
- Double-Press up, to save the current recording to the undo buffer (same as double-click PLAY)

While playing, the machine will also respond to single-press up or down program change events based on basic states such as rehearsal or recording. The default state is Rehearsal with measure hold, i.e. no recording.

- [REHEARSAL with MEASURE-HOLD] - <down> - does nothing
- [REHEARSAL or RECORD] - <down> - will clear the recording (same as button X)
- [REHEARSAL with UNDO] - <down> - will undo (same as button EDIT)
- [REHEARSAL] - <up> - will enable record (same as button RECORD)
- [RECORD] - <up> - will enable rehearsal (same as button PLAY)

#### Implementation Note:

The first program change event after the machine has started-up will be ignored because all events are relative to the “last” event, either up or down. The first event received has no previous event so it becomes the reference event for “last”.

### Return Page Cluster to Solo Recording

When in the Grid View, you may select a page cluster to return to Solo Recording

View with that cluster as the recording cluster. This is mentioned earlier in the section: Page Cluster Move / Clear / Copy.

## Quantize

The top CHORD button is enabled by default to automatically quantize the first note of the first measure. This will correct otherwise silent notes during the first loop that have an STA value less than 0. Because this will change the rhythm and length of the first note, there are many situations such as recording an external arpeggiator when you will want to turn this off to capture a more exact recording.

The other CHORD buttons indicate the amount of STA allowed for each note, positive or negative. Counting from zero, the bottom CHORD button is STA = 0. The default chord position is 6 and will have no effect because the maximum STA value for a note is +/-5. As you move down, the STA value of the notes in your recording will be moving closer to zero, exactly on-the-beat. Press the quantize CHORD button a second time to toggle between the two quantization modes.

There are two types of quantization:

- **All steps pull relative to center (LED green)**
  - The amount of quantization will apply a relative offset to each step moving it by that amount to center, e.g., quantize value of 2 will move a step with STA -2 to 0 and a step with STA 5 to 3
- **Hard limit (LED pink)**
  - The amount of quantization acts like a brickwall limiter, e.g., quantize value of 1 will not affect a step with STA -2 and a step with STA 5 will become 4

Quantization may be changed at any time after recording and the corresponding STA values will be reflected in real-time.

### Implementation Note:

Due to CPU limits, applying effects such as quantize while the sequencer is started can cause jitter during note playback. Stop and start the sequencer to restore the correct MIDI note timing.

## Duplicate

When there are enough available unused measures, you may duplicate the contents of a track chain within that page. While the machine is stopped, hold the desired page in the Grid and press the XXXI button. You may also copy a full page to the end of the page cluster by holding it and pressing the XXX button.

## Undo

The EDIT LED will show orange to indicate that the entire recording will be reverted to its previous state, i.e. prior to the most recent overdub or cut. Press EDIT to undo recent changes.

## Chords as Keys

Pressing the SCALE select button will toggle between the regular note transpose circle display the Chord as Keys display. This mode will override the keyboard notes and instead will play pre-defined chords with only the white keys. The black keys will invoke special functions.



NOTE: You will want to set your synthesizer keyboard to “local controller off” so that only the machine echo-back MIDI notes generate a sound.

Each scale has a database of known chords for each tone in the circle. The chords are ordered so that the same keyboard key in a different tone will attempt to play a related chord. This is organized from left to right on a 5-octave keyboard with C# as the A/B toggle for the split keyboard. This is required because there are more than 36 chords in some scale tones.

The black keys perform the following functions.

- C# is the A/B split keyboard toggle
- D#, when held for 2 seconds, will save the current pitch offset, scale, and musical key
  - When pressed for less than 2 seconds, it will switch between the two most recent saved values
- F# will move the Breakaway Pitch offset down and A# will move the Breakaway Pitch offset up
- G# will enable the Chord Palette
  - Holding G# for 2 seconds will arm the last played note for Chord Palette assignment, and will enter the Chord Palette Editor view

A Breakaway Pitch is a pitch that has been offset from the original scale, musical key, and octave. The pitch of each note in the chord will be shifted according to the selected keyboard scale. These notes will then be forced to scale. The default offset of zero occupies C in the circle section and is not shown. All offsets that are multiples of 12 are not Breakaway Pitches. Other offsets will show a yellow LED in the circle. Breakaway Pitch is a quick way to explore nearby tones.

Pressing a chord key will briefly show the notes of the chord at the top row of the grid matrix. The circle section will briefly display the musical modulations of the current chord. As with regular notes, you may change the scale of the predefined chords and you may choose a different musical key by pressing a different key in the circle. The Breakaway Pitch offset and the musical key of the chord are both shown in the circle.

The MOD and CAD buttons are used to transpose down or up by a full octave.

A Breakaway Pitch offset will not affect the notes displayed in the top row of the grid. The grid will always show the original chord notes regardless of the actual pitch that is played.

Unlike the traditional Octopus mechanism for building chord structures, Chords as Keys uses a database of chords. This provides many benefits but there are two minor drawbacks, (1) the database is note order aware, and (2) the database is aware of sharp and flat notes. Currently, the machine is only able to play chord notes in the order of the lowest base note upward, and there is currently no way to distinguish flat from sharp. The note order is used in the Chord Arp. You will notice that there are some keys that play the same duplicate chord within a scale.

The database scales are:

- Pentatonic
- Whole Tone
- Major
- Minor
- Diminished Lydian
- Chromatic

Note: The F note has been removed from the original Diminished scale. Also, the Chromatic scale does not support Chord Keys.

Anti-Echo will automatically be disabled when you enter Chord Keys so that MIDI notes received will be played out as a chord, or sequence of MIDI notes. You will need to remember this and disable “local control on” on your keyboard synthesizer to avoid a MIDI loop.

## Chord Palette

When in Chord Keys mode, press and hold G# for 2 seconds to enter the Chord Palette editor view. The Chord Palette is a single octave on the keyboard that is dedicated to saved chords and arpeggiator patterns. You assign the location of the palette octave by shifting the position using the MOD and CAD buttons. The default location is C3.

To assign a chord to a key in the palette you must first arm the editor with the most recently played chord. Do this by pressing the key on the keyboard of the chord that you would like to save, then press G# for 2 seconds. You will see the Program button flash yellow indicating that you are in the Chord Palette Editor. The SCALE select button will flash red to indicate that the editor is armed with a recent chord. When armed, you may press an empty key in the palette octave to assign it. If you would like to un-arm the editor, press G# again, or the PROGRAM button to remain in the editor.

To remove an assigned palette key, double click the corresponding note in the circle section. To copy a palette key, hold an existing key (careful not to double-click) and press an empty key.

Press G# again to exit the Palette Editor. The Program LED will show green to indicate that the palette is still enabled on the keyboard. The palette will remain enabled if you switch away from chords, back to regular notes. You may always press the Program button to enable/disable the palette.

When a chord is copied to the palette the current pitch offset is also saved. If the pitch is aligned to an octave it will not be displayed. This means that the notes shown at the top of the Chord Palette Editor in the matrix are playing the pitches that match their note labels. If the pitch is a Breakaway Pitch, the value will be visible in the PIT grid row. The PIT rotary knob will change the offset value. If there is an existing arpeggiator, changing the pitch offset will not affect the pitch of the arp notes but it will change the pitch of the note pool at the top of the grid. You are able to grab notes and place them into your pattern with the new pitch offset.

## Arp Builder

The Chord Arpeggiator is directly related to the Chord Palette Editor. Any assigned chord in the palette may be converted to an Arpeggiator. To do this, enter the Chord Palette by pressing G# for 2 seconds. Press a palette key that you would like to work with then press one of the six buttons at the bottom of the grid matrix, ATR through MAP0. These buttons represent the six possible key combinations in a triad.

From left to right: BOTTOM UP (1,2,3), TOP DOWN (3,2,1), CENTER BOTTOM UP (2,1,3), CENTER TOP DOWN (2,3,1), BOTTOM TOP CENTER (1,3,2), TOP BOTTOM CENTER (3,1,2).

This uses a simple algorithm that will work with chords of any size. Press the palette key or the Play button to rehearse the Arp. You will notice that BOTTOM-UP does not

appear to play the notes in the correct order. The chord database defines the expected order that the notes should be played by default. The ATR button will always play the Arp in the natural database defined order.

To clear the current Arp and return to playing it as a regular chord key, press the SEL (RCL/CLR) button. You may add notes to the Arp pattern by grabbing them from the chord note display at the top of the matrix. Press and hold the note that you would like to assign from the matrix top row and press an empty space in the pattern row. You may also stack notes to build chords within the Arp pattern. To quickly copy an existing step, hold the step and press another empty step within the pattern boundary.

The MCH and PST buttons are used to shift right and left relative to a pressed note. The LEN rotary knob will apply a note length offset relative to all steps in the pattern, or to individual steps when holding a step in the pattern.

To stop an Arp from playing, press STOP or any non-Arp key.

## Transpose

When there is a recording, the PLAY button in the Mode section will become active. Pressing PLAY will arm the Scale section and MIDI keyboard keys. Play and record will behave the same, except that play will automatically revert the transpositions. Transpositions are per-track not per step.

To transpose the first track in a recording, select a scale and musical key when the machine is stopped. This will cause the LEDs to flash, indicating that the transpose latch is active. When the machine is playing, the latch will copy the transposition values from the previous track to the next track. Press any of the flashing scale buttons a second time to disable the latch, or press the same MIDI keyboard key twice.

To modify the track pitch by full octaves press the MOD and CAD buttons. Scale values may be changed while the machine is playing and recording. The transpositions will play-back for each track as they were played on the machine, except, the transposition will always start at the beginning of the measure.

When you enter Transpose Mode, a copy of the transposition values of the current recording is saved to the undo buffer. You may press EDIT at any time to revert the recording. Double-Click EDIT, to clear all transpositions for the recording. You may still press EDIT once to revert back to your original recording.

## Keyboard Transpose

When the Mode PLAY button is armed, the keyboard keys will be used to transpose relative to C4. Press a keyboard key to transpose, as you would in the circle section. If the key is beyond an octave from C4 it will apply a key-shift and an octave-shift. Release the key to disable the transpose latch. Once a step has been transposed additional transpositions will be relative to the original pitches.

## Strum

The top right TEMPO rotary knob is used to apply strum values. Press EXC/ALN a second time to enable the latch, indicated by a blinking LED. The EXC/ALN LED will be lit if there is a non-zero strum value set. Without the latch, the strum value will be applied to notes as they are recorded. You will not hear the strum until the notes are played back. If the machine is not recording, changing the strum with the latch on will apply to all steps. When recording, the strum value will only be applied at the time that

the TEMPO rotary knob was turned relative to the current playing step.

To clear a recorded strum, turn off the latch while record is still enabled then rotate the TEMPO rotary to any value, up or down, while the chase light is over the note that you want to reset; just as you did to record when the latch was on.

The strum value will also apply to the Chord Palette Arp Builder when a new Arp is created. In this view, the EXC/ALN button is only used to display the current strum value.

## Legato

The STEP MODE button is used to enable Legato. Legato will modify the length of every recorded step so that it plays up to the beginning of the next step. Toggle STEP MODE off to reset all steps to their original length. This can be used with portamento/glide on a mono synth to create violin or 303 type bass sounds.

## Normalize

Normalize Velocity will take the original average velocity of all steps in a recording and will adjust the step velocities toward that average. The right VEL rotary knob will set the amount from 1-16. Sixteen will ensure that all steps have the same velocity.

Normalize Step Length works like Normalize Velocity. Additionally, the left LEN rotary will apply a global length that will increase or decrease all steps relative to their original length. The first ten increments, negative or positive will add  $\frac{1}{4}$  step adjustments to the length. Beyond ten, the adjustments will be one full step, indicated by a flashing LED.