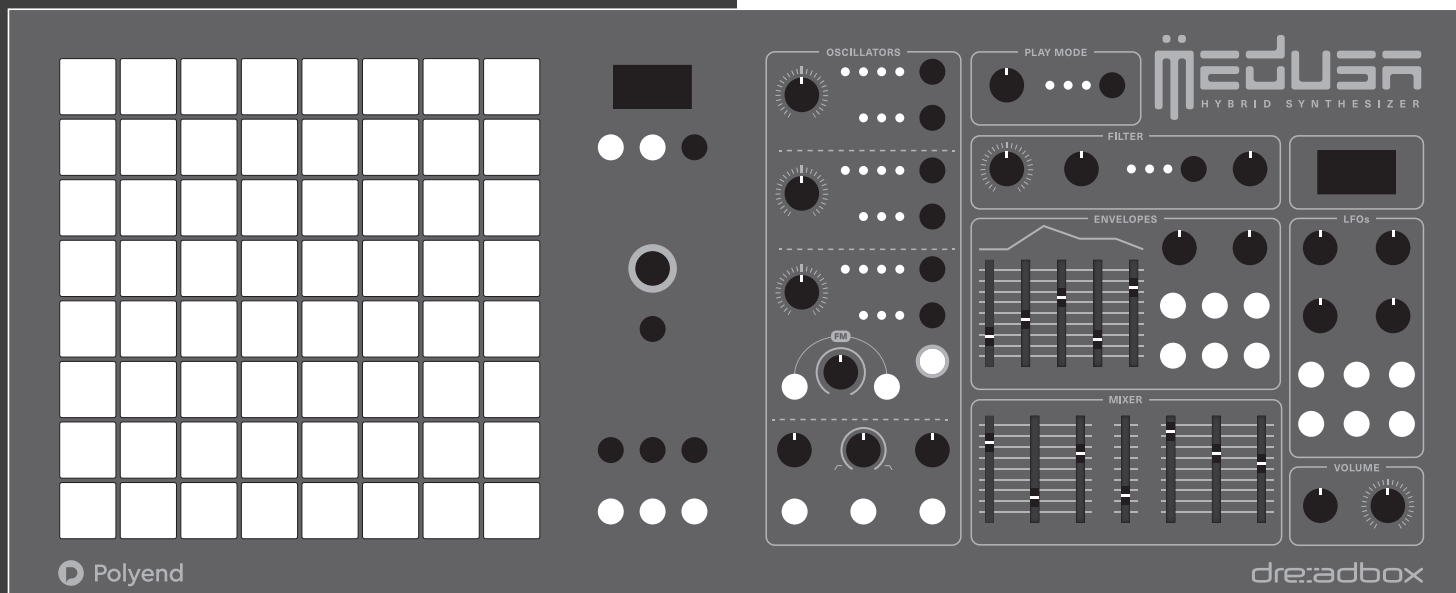


medusa

Owner's Manual

USA



Contents

Introduction	3
Quick Start	4
Schematic Diagram	5
Manual	6
Overview	6
The Synthesizer	7
1. The Oscillators	7
2. The Filter	8
3. The Envelopes	8
4. The Low Frequency Oscillators (LFOs)	9
5. Play Modes	9
6. Mixer and Volume	10
The Grid and Sequencer	10
1. How it's Organized	10
2. Two Modes: Grid and Notes.....	11
3. Creating, Playing, and Editing a Sequence.....	12
4. Using the Pads as a Keyboard	15
Other Info	17
1. Saving and Loading Programs.....	17
2. Input and Output.....	17
3. Random Button.....	18
4. The Config Menu	18
5. Firmware Update Procedure.....	20
6. CC Chart	21
Appendices	24
A. List of Modulation Destinations.....	24
B. List of Modes and Scales	26



Introduction

A joint development between **Dreadbox** and **Polyend**, the Medusa is a 6-oscillator (3 voltage-controlled analog and 3 digital) hybrid synth, coupling the sound of analog with the control of digital. It is equipped with:

- A multimode analog filter based on the Erebus with 2-pole LP, 4-pole LP, and 1-pole HP settings
- A 64-step sequencer inheriting the spirit of the Polyend Seq
- An 8 x 8 grid of side-to-side (X), up-and-down (Y), and pressure sensitive (Z) pads used to play the synthesizer and program the sequencer
- 3 play modes including: 1-voice, unison mono (up to 6 oscillators), 3-voice (2 oscillators per voice), and 6-voice (1 oscillator per voice)
- 5 envelopes (3 assignable) and 5 LFOs (all assignable)
- 2 OLED displays providing visual feedback on knob and slider settings; envelopes and LFOs; and menu and configuration settings
- Ability to save up to 128 programs and sequences

As a first for **Dreadbox**, you'll now be able to program patches and sequences, save them, and then play them directly from the synth using the 8 x 8 grid of pads.

As a first for **Polyend**, you'll now have a myriad of shapeable analog and digital sounds that can be wildly modulated and directly married to the sequencer.

Playing with the Medusa won't turn you to stone, but don't be surprised if you find yourself frozen in front of it, playing for hours.

Please before using the Medusa synthesizer, make sure that you have installed the latest firmware, which can be found in the following links:

www.polyend.com/medusa
www.dreadbox-fx.com/medusa

Quick Start

1 **Connect** the power adapter and turn the unit **ON**

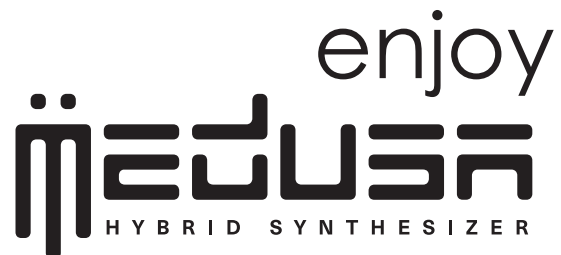
2 **Connect** a corresponding device (monitor, amp, headphones) to the **OUTPUT** or **PHONES**

3 Let the synthesizer **warm up** for at least **20 minutes**.
Afterwards you can do a manual calibration*

4 We suggest you explore the **32 factory presets**.
LOAD > press any of the 1-32 pads

5 **GRID = OFF** : The pads are used as a keyboard
GRID = ON : The pads hold stored parameters and notes

6 In order to turn an **Envelope** or an **LFO** ON or OFF double click the button

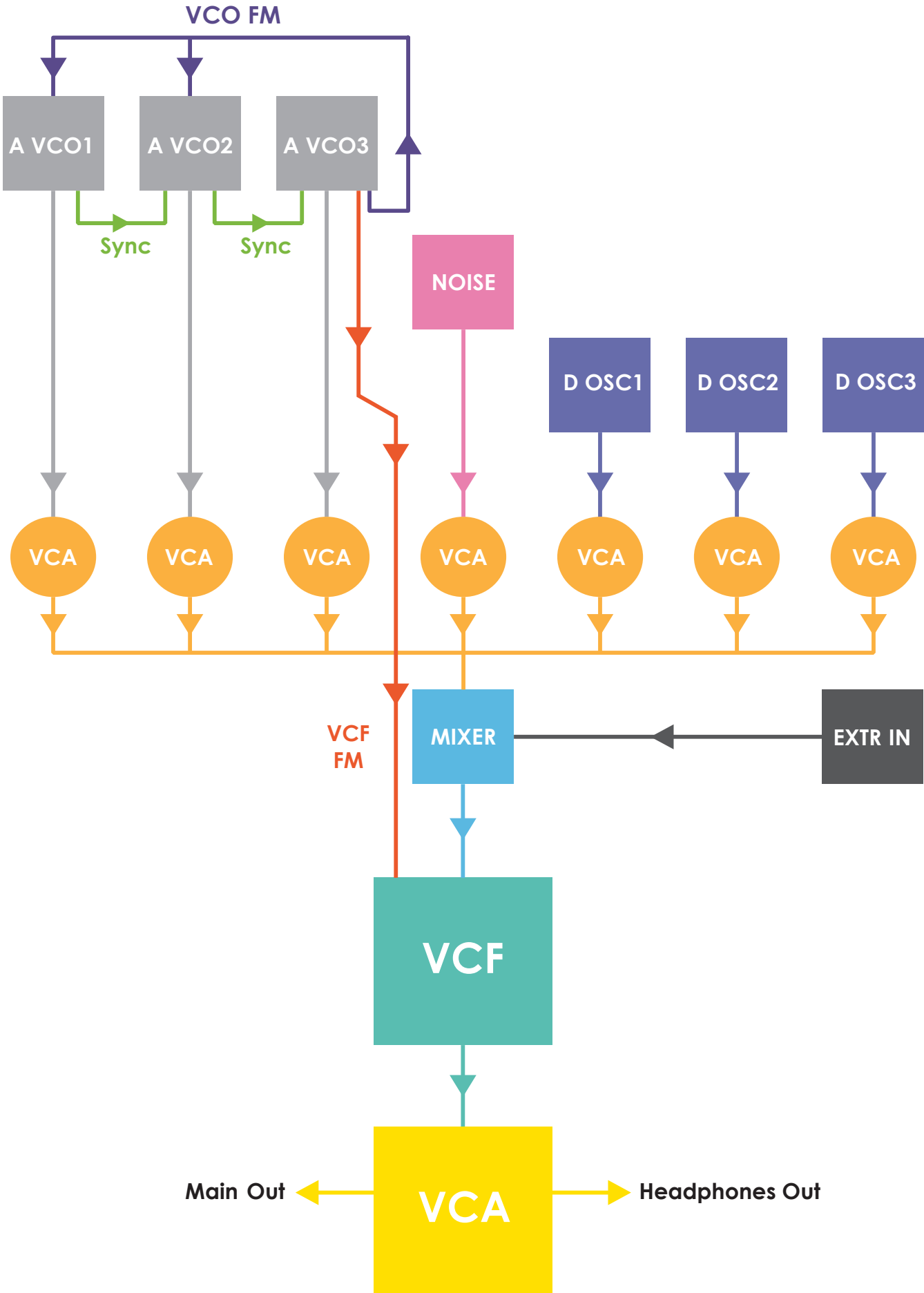


* manual calibration

CONFIG > Calibration > Start

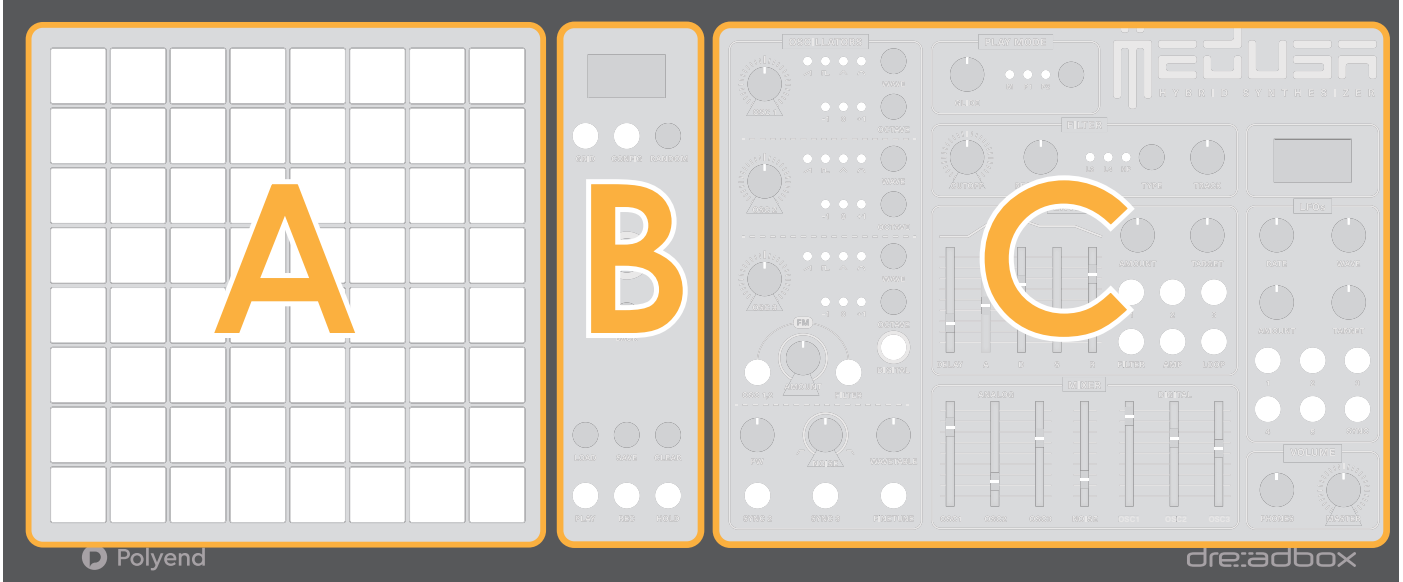
When the Calibration is completed, press CONFIG to return back

Schematic Diagram



Manual

Overview



The Medusa has 3 main sections for working with the synthesizer and sequencer.

Section A

This is the 8 x 8 grid of buttons that can be used to play the synth, program the sequencer, and select storage locations for GRID data and Medusa programs.

Section B

This section of the Medusa is used to program, play, and edit the sequencer as well as to configure various settings for the sequencer and the synth. The OLED at the top of this section (referred to as the seq OLED in this manual) displays the assorted menu choices for configuring the sequencer and synth.

Section C

This section of the Medusa is used to program the various parameters and settings for the synth engine. The OLED in this section (referred to as the synth OLED in this manual) displays various information about patch settings (including knob and slider values) while they are being changed or edited.

The Synthesizer

After toggling on, your Medusa unit will welcome you with an initial auto-calibration process, the pads will pulse and there will be a progress bar visible on the top of the middle screen.

1. The Oscillators

The Medusa is equipped with 3 analog oscillators and 3 digital oscillators (referred to as **A OSC1**, **A OSC2**, **A OSC3** and **D OSC1**, **D OSC2**, **D OSC3** for this manual and the menu options in the Medusa).

When the Medusa first powers up, an auto-calibration routine is launched, tuning the oscillators. This is indicated by a small dot in the top of the seq OLED in section B of the Medusa. From the **CONFIG** menu (see page 14), calibration can also be manually started if required.

The analog oscillators offer a choice of classic waveforms, including: saw tooth (ramp up), pulse wave, triangle, and sine. The digital oscillators have the same 4 classic waveforms plus a 5th wavetable option. When the wavetable is selected, all four of the LEDs next to the wave illustrations will light up.

The wavetable oscillator offers 20 wavetables you can select via the **PRESET MENU** (see page 17), and wavetable position can be modulated for each **D OSC** manually with the **WAVETABLE** knob (**M**), or automated with envelopes and/or LFOs.

Notice that there are 3 identical sets of controls (**A**, **B**, and **C**) for both the analog and digital oscillators. If the **DIGITAL** button (**F**) is pressed and lit, then the controls (buttons/knobs **A**, **B**, and **C**) will affect the 3 digital oscillators. If the **DIGITAL** button is not lit then the controls apply to the 3 analog oscillators. The **OSC 1**, **2**, and **3** knobs (**A**) let you tune either oscillator ± 12 semitones (an octave), or with the **FINE TUNE** button (**M**) pressed and lit, the knobs will tune ± 100 cents (1 semitone). By pressing the **WAVE** button (**B**), you can cycle through and select the available analog and digital wave forms. By pressing the **OCTAVE** (**C**) button, you can transpose the pitch of the oscillators up or down an octave.

When the **OSC 1, 2** button (**D**) is pressed, the **FM** knob (**E**) controls the amount of exponential frequency modulation of **A OSC 1** and **A OSC 2** by **A OSC 3**. When the **FILTER** button (**G**) is pressed, the **FM** knob (**E**) controls the amount of frequency modulation of the filter cutoff by **A OSC 3**.

The **PW** knob (**H**) lets you manually adjust the pulse width of the pulse wave for the 3 analog oscillators, from 50% to 95%. This same value is applied to each oscillator, but doesn't affect the digital oscillators. The pulse-width can also be modulated by both envelopes and LFOs.



The **NOISE** knob (I) lets you mix a balance between brown noise (low-pass 6db/oct) and violet noise (high-pass 6db/oct). In the middle position it offers grey noise (notch filtered) equally mixing both the low-pass filtered noise and the high-pass filtered noise.

The **SYNC 2** button (K) synchronizes **A OSC 2** to **A OSC 1**, and **SYNC 3** button (L) synchronizes **A OSC 3** to **A OSC 2**, letting you add extra harmonics to the wave form. Important to note, the **OSC 1,2 FM**, **SYNC 2**, and **SYNC 3** buttons have no effect on the digital oscillators. They only affect the analog oscillators.

2. The Filter

The Medusa comes with a switchable, 3 state filter, offering 2-pole (12dB/oct) low pass (LP), 4-pole (24dB/oct) LP filter, and 1-pole (6dB/oct) high pass (HP) settings. Both resonance and tracking settings offer further control of the filter, and the filter can self-oscillate.

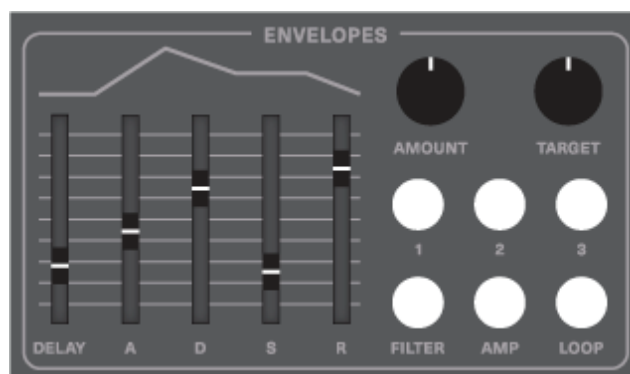


Use the **CUTOFF** dial to control the cutoff frequency of the filter, the **RESONANCE** knob to apply resonance to the filter, and lastly use the **TRACK** knob to adjust how much or how little the filter tracks to the keyboard.

3. The Envelopes

The Medusa offers 5 loop-able, **Delay-A-D-S-R** envelopes, with the 4th (**FILTER**) and 5th (**AMP**) envelopes being dedicated to the filter and amplifier respectively. All the envelopes can be assigned to modulate a list of targets (see **Appendix A - List of Modulation Destinations**).

To activate and use envelope **1**, **2**, **3**, or the **FILTER** envelope (the **AMP** envelope is always on), double click the corresponding button, and the synth OLED will show the word "ON". To turn off an envelope, simply double click it again.



To link the slider controls to a particular envelope, press and release the button for that envelope (**1**, **2**, **3**, **FILTER**, or **AMP**). When you adjust the sliders, the light for the envelope you're controlling will blink, and the shape of the envelope will be displayed in the synth OLED.

The **AMOUNT** knob lets you control how much the envelope affects or modulates the target, and the **TARGET** knob lets you choose what the envelope will modulate (see **Appendix A - List of Modulation Destinations**). A short cut for linking an envelope with a target is to press and hold the desired envelope button, and move the knob or slider associated with the parameter. This also works for LFOs. Please, notice that in order to add the **FM** modulator as a target for ENVs and LFOs you need to use the choice of **OSC 1,2** or Filter buttons instead of the **AMOUNT** knob.

Offering even more flexibility, by pressing the **LOOP** button, the envelopes can be set to repeat or loop, behaving more like shapeable **LFOs**, where the **LFO** shape and rate is defined by the **Delay-A-D-S-R** values and how fast or slow the envelope cycles through each stage.

4. The Low Frequency Oscillators (LFOs)

The Medusa has 5 **LFOs**, with each **LFO** capable of variably sweeping through sine, pulse/square, saw (ramp up), triangle, and reverse saw (ramp down) waveforms. As you adjust the **WAVE** knob to sweep through the waveforms, the synth OLED will display the shape. LFO rates range from .01Hz to 30Hz and can be assigned to a list of parameters (see **Appendix A - List of Modulation Destinations**) selected with the **TARGET** knob.

The buttons numbered **1** through **5** let you quickly select each of the independent **LFOs**, and the 4 knobs let you control the **LFO RATE**, the **LFO WAVE**, the **LFO AMOUNT** (amplitude), and the modulation **TARGET** for each of the **LFOs**. When lit, the **SYNC** button will force the **LFOs** to synchronize with the overall clock setting of the sequencer and change the values displayed with the **RATE** knob from Herz to note values.



A shortcut for linking an **LFO** with a **TARGET** is to press and hold the desired **LFO** button and move the knob or slider associated with the desired target parameter. As mentioned earlier in the manual, this is also valid for the envelopes.

5. Play Modes

The Medusa offers 3 unique play modes:

M - this mode runs all 6 oscillators (3 analog and 3 digital) through the filter in one thick, mono voice.

P1 - this mode lets you play up to 3 voices, with 2 oscillators per voice (pairing **A OSC1** with **D OSC1** for voice 1, **A OSC2** with **D OSC2** for voice 2, etc)

P2 - this mode lets you play up to 6 voices, using 1 oscillator per voice, assigning oscillators to chordal voices in sequential order (the first 1st note in a chord will start with **A OSC1** and continue to the 6th note using **D OSC3**).



The table below compares the different modes:

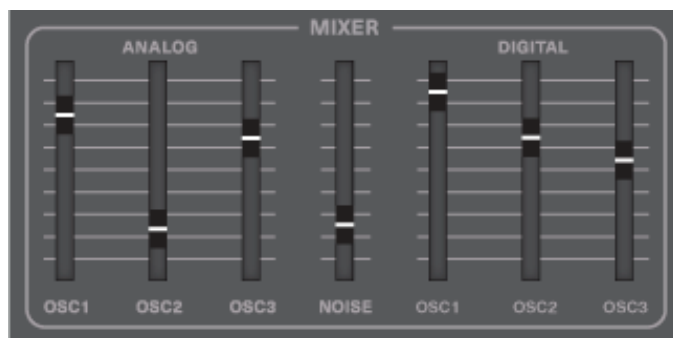
MODE	VOICES	OSCs/VOICE	FILTER CONFIG	AMP CONFIG
M	1	6	1 shared filter and envelope	1 shared amp envelope
P1	3	2	1 shared filter and envelope for all voices	1 shared amp envelope
P2	6	1	1 shared filter and envelope for all voices	1 amp envelope per voice (6 total)

For both **P1** and **P2** modes you can also set the Voice Priority to First, where whatever note is played will grab the first available **A OSC**, **D OSC** or pair of **OSCs**. If you play monophonically in **P1** or **P2** (one note at a time), it will only use that first oscillator. With the Voice Priority set to Next, Medusa will rotate through the available **OSCs**, allowing longer releases to sound. These settings are accessed through the **CONFIG** menu (see page 18).

The **GLIDE** knob lets you adjust how quickly a note or notes will glide to their intended pitch.

6. Mixer and Volume

The mixer lets you balance the output levels of the **3 ANALOG** oscillators **OSC1**, **OSC2**, and **OSC3**; the **NOISE** source; and the **3 DIGITAL** oscillators **OSC1**, **OSC2**, and **OSC3**. When the **MIXER** amplitude is turned down to minimum for any osc, that osc is actually switched off.



The **PHONES** knob lets you control the volume for headphones plugged into the headphone jack, and the **MASTER** dial lets you control the volume from the line out on the back of the Medusa.

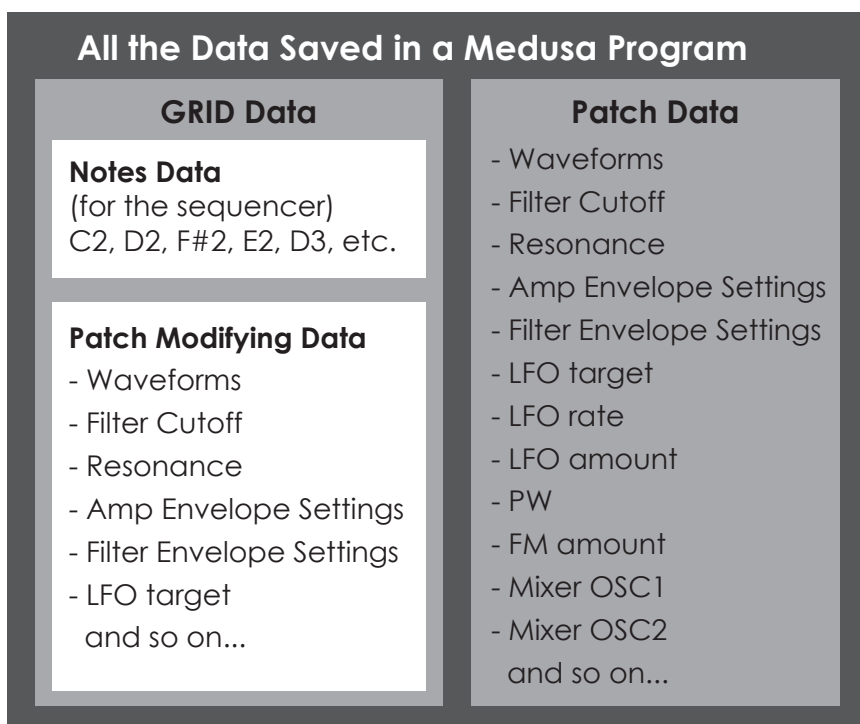
The Grid and Sequencer

1. How it's Organized

To understand the Medusa, it is important to understand how it organizes, stores and works with data.

When you save a **Program** on the Medusa, you're actually saving:

- 1) Data related to the sound the synthesizer makes (the **Patch Data** shown in the illustration at the right) and
- 2) The Medusa **GRID** Data (also shown in the illustration to the right).



Conceptually, the **GRID** on the Medusa consists of 3 things:

- 1) The 8 x 8 matrix of pads used to play notes and store parameters.
- 2) **NOTE** data determining what the sequencer plays.
- 3) **PATCH Modifying Data** (also referred to as **PM Data** in this manual) that lets you modulate the Medusa sound on the fly or program parameters to modulate the synth with each step of the sequencer.

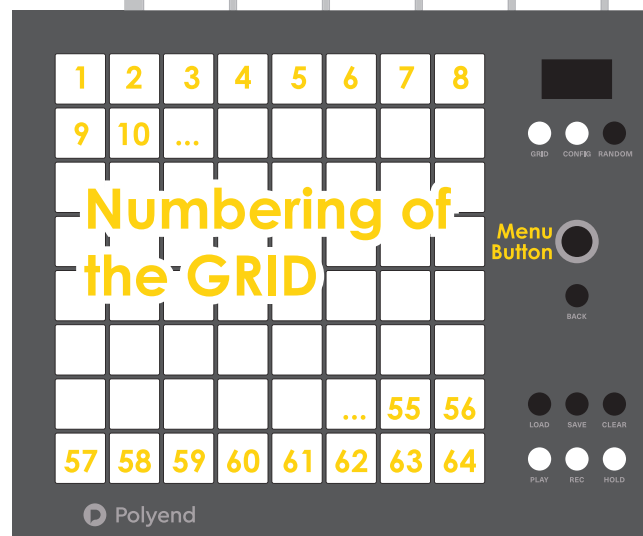
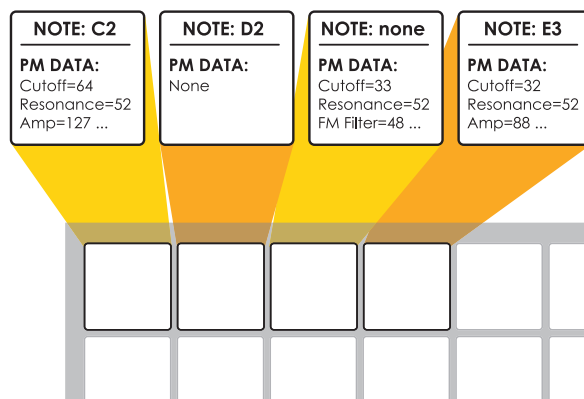
It's easiest to think of each pad of the 8 x 8 matrix as 64 little boxes that can contain **NOTE data**, **PATCH Modifying Data**, both, or neither.

Looking at the example to the right, pad 1 contains a **NOTE** value of C2 and PM Data where the filter cutoff is 64, the filter resonance is 52, and overall amplitude is 127. Pad 2 contains a note value of D2 but no **PM data**. Pad 3 contains no note data, but does have PM data where the filter cutoff is 33, the filter resonance is 52, and FM filter is 48.

The **sequencer** of the Medusa can be programmed, controlled, and edited by the 8 x 8 grid of silicon pads and the collection of knobs and buttons positioned to the left of the grid.

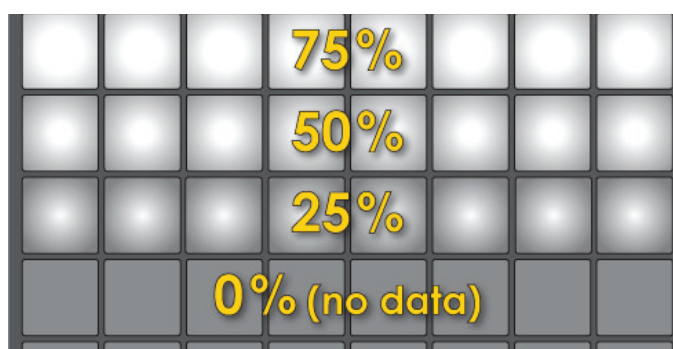
The **pads** are numbered 1 to 64, starting in the top left corner (pad 1) and ending in the bottom right corner (pad 64). When a sequence is built or recorded, the first step or note value is stored in pad 1, the second step or note value is stored in pad 2, the third in pad 3, and so on. An eight step sequence would have the note values stored in pad 1 through pad 8. A sixty-four step sequence would have the notes stored in pad 1 through pad 64.

Important to note, the **Menu Button**, a clickable encoder, can be used to scroll through and select menu items listed in the seq OLED.



2. Two Modes: Grid and Notes

There are 2 modes to work with the 2 types of **GRID** data: **GRID** mode and **NOTES** mode. The **GRID** mode is used to program and edit any **Patch Modifying Data**, and the aptly named **NOTES** mode is used to program and edit the notes of the sequences you create. By default the Medusa starts in **NOTES** mode, and this mode is indicated by the seq OLED showing "**Notes Mode**" in the top left corner. To enter the **GRID** mode, simply press and release the **GRID** button. The **GRID** button will now be lit, and the seq OLED will display "**Grid Mode**" in the top left corner.



The **GRID mode** also offers an easy way to see where both **NOTE** and **Patch Modifying Data** are stored in the 8 x 8 grid. In **GRID** mode, if a pad is lit:

- **0%** - contains **no data**
- **25%** - contains only **PM data**
- **50%** - contains only **NOTE data**
- **75%** - contains both **NOTE** and **PM data**

Additional parameters for controlling and setting up the sequencer can be viewed and modified through the **PRESET MENU**. To access the **PRESET MENU** for the sequencer, press the **Menu Button** (as shown on the previous page). This will let you access the following sequencer parameters:

Parameter	Possible Values	Information
Tempo	10-300 bpm	Lets you set the tempo for the Medusa master clock, from 10 to 300 beats per minute. When the LFO rate is synched to the master clock it will change in relation to this value.
Swing	25-75	A value of 50 is neutral and offers no swing to the note value.
Seq Length	1-64	A sequence can be 1 to 64 steps long
Seq Mode	Forward Backward Ping Pong Random	<p>Forward - the sequence executes the total number of steps and then loops to start again (e.g. 1-2-3-4, 1-2-3-4, etc)</p> <p>Backward - the sequence starts at the last step of the total number of steps runs in reverse until it reaches the first step, and then loops back to the last step again (e.g. 4-3-2-1, 4-3-2-1, etc)</p> <p>Ping Pong - sequence runs all steps forward, then all steps backward, and loops to start again (e.g. 1-2-3-4, 4-3-2-1, 1-2-3-4, etc)</p> <p>Random - the sequence endlessly loops, randomly picking values from the total sequence length (e.g. 3-1-2-3, 4-1-2-1, 2-4-2-3, etc)</p>

Turn the knob to highlight the menu item you want to select, press the knob (clicked like a button), then select from the possible values, and then press the knob again to choose the value you want.

2. Creating, Playing, and Editing a Sequence

Creating a sequence is an easy process. To start from scratch, simply pick a program, clear any notes or **PM Data**, choose the length of the sequence, and then hit the **RECORD** button and start playing in the notes with the 64 touch pads or an external midi keyboard. When the sequencer is running, press the **RECORD** button and start playing the pads to record notes and chords in an “overdub” manner. For more specific info how to do that, check out the “How To” matrix on the next page.

How To	Mode	Steps
Clear all NOTES and PM data	GRID	<ol style="list-style-type: none"> 1. Press the REC button (it should be blinking if active). 2. Press HOLD + CLEAR and hold. 3. On the seq OLED "Clear Notes & param" appears, and using the Knob-Button, select "all steps". 4. All note and patch modifying data should be deleted
Set up the sequencer	Either	<ol style="list-style-type: none"> 1. Press the Menu Button to access the PRESET MENU and set up the Tempo, Seq length, and Seq mode 2. Select and click Seq length from the menu and set the length (1-64) by dialing a value with the Knob-Button or pressing the pad that will be the last in the sequence. 3. Select and click Tempo from the menu and dial in the desired BPM value (min 10 to max 300) 4. Select and click Seq Mode to select Forward, Backward, Ping Pong, and Random
Enter sequencer notes (NOTES data)	NOTES	<ol style="list-style-type: none"> 1. Press the REC button (it should be blinking if active) 2. Play the notes you want with either the pads or an external MIDI keyboard (to enter a blank or rest for a step, press the CLEAR button instead of a key or pad)
Edit sequencer notes (NOTES data)	Either	<p>You can edit notes from both the NOTES mode and the GRID mode. From the NOTES mode:</p> <ol style="list-style-type: none"> 1. Press the REC button (it should be blinking if active) 2. The current active pad will also be blinking. Dial the Menu Button to change the active pad to the step/pad you wish to edit. 3. Play the new note either from the pads or an external MIDI controller. <p>From the GRID mode:</p> <ol style="list-style-type: none"> 1. Press the REC button (it should be blinking if active). 2. Press the step/pad you wish to change and hold it. The note will sound and the OLED will display which step it is and what the note value is (e.g. G3, C2, etc) 3. While pressing the pad, dial the Menu Button to select a new note. The OLED will display the notes as you scroll through them.

<p>Copy sequencer notes and PM data (from one step or pad to another)</p>	<p>GRID</p>	<ol style="list-style-type: none"> 1. Press the REC button (it should be blinking if active) 2. Press the pad you want to copy and hold it (both note and PM data will be copied). After a couple seconds, the OLED will indicate the step and note were copied. 3. While still pressing the first pad you want to copy, press the second pad you want to copy the data to. 4. The OLED will show a message that the first step was copied to the second step (e.g. "Step 3 copied to 2")
<p>Start/Stop sequencer</p>	<p>Either</p>	<ol style="list-style-type: none"> 1. Press the PLAY button to start the sequencer. The PLAY button will be lit when the sequencer is playing. 2. While the sequencer is playing, press the PLAY button again to stop it. 3. If the sequencer is stopped and you restart it, it starts from the beginning of the sequence, not where it stopped.
<p>Enter PM data</p>	<p>GRID</p>	<ol style="list-style-type: none"> 1. Press the REC button (it should be flashing). 2. Press the pad to select where you want to enter data (note: there doesn't have to be note data already stored in the pad location; pads with only PM Data can be used like programmable buttons to instantly modify synth parameters on the fly). 3. Adjust any of the synth parameters. The pad will now have basically a "snapshot" of programming parameters. 4. Lastly, if you do have a sequence already recorded, you can hit PLAY while REC is active and record PM data by adjusting synth parameters and values while the sequencer is running.
<p>Edit PM data</p>	<p>GRID</p>	<ol style="list-style-type: none"> 1. Press REC button (it should be flashing after being pressed). 2. Press the pad that contains the PM data you want to edit (the pad should be flashing after you press it). 3. Adjust the desired parameters (cutoff, resonance, octave, course tuning, LFO amount, etc). 4. When you're finished editing, press the REC button again to stop editing (it should not be flashing), to avoid accidentally making unwanted changes/edits.

<p>Delete PM data</p>	<p>GRID</p>	<ol style="list-style-type: none"> 1. Press the REC button (it should be blinking if active). 2. Press CLEAR button and hold it. 3. On the seq OLED "Clear parameters" appears, and using the Knob-Button, select either "selected steps" or "all steps". 4. To clear only "selected steps", press and hold the pads you want to delete, and release the CLEAR button. 5. To clear "all steps", select it in the menu, and release the CLEAR button.
<p>Delete sequencer notes (NOTES data)</p>	<p>GRID</p>	<ol style="list-style-type: none"> 1. Press the REC button (it should be blinking if active). 2. Press HOLD button and hold it. 3. On the seq OLED "Clear Notes" appears, and using the Knob-Button, select either "selected steps" or "all steps". 4. To clear only "selected steps", press and hold the pads you want to delete, and release the HOLD button. 5. To clear "all steps", select it in the menu, and release the CLEAR button.

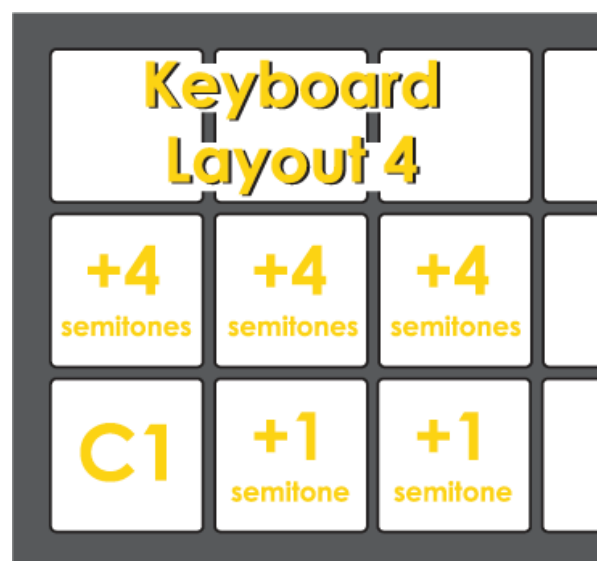
4. Using the Pads as a Keyboard

The 8 x 8 grid of silicon pads can also be used to play the Medusa, using one of 40 predefined scales and modes (see **Appendix C - "List of Modes and Scales"** for the complete list of options). Just put the Medusa in **NOTES** mode (ensure the **GRID** button isn't lit), and start hitting the pads to make beautiful music. In addition to playing a note, each pad can modulate up to 3 different targets based on side-to-side motion (X), up-and-down (Y) motion, and pressure (Z).

X, Y & Z targets are being modulated by the last pressed pad only.

The playable matrix of pads is laid out with the lowest note value being in the lower left pad (pad 57), incrementing a semitone with each position to the right. If pad 57 were a C1, then the next note on pad 58 would be a C#1, pad 59 would be a D1, and so on until pad 64 which would be a G1.

How the adjacent pads change pitch depends on the chosen **Layout** from the **Preset Menu**. Choose a pad, and the pad directly to the right will increase the pitch one semitone regardless of the chosen **Layout**. For **Layout 1**, the pad directly above will increase the pitch 1 semitone. For **Layout 2**, the pad directly above will increase the pitch 2 semitones. For **Layout 4**, (see the illustration above right) the pad directly above will increase the pitch 4 semitones. And so it goes, up to **Layout 7** where the pad directly above will increase the pitch 7 semitones.



When not in **GRID** mode (when the pads are behaving like a keyboard), the pads corresponding to the root and octave notes will be lit, letting you know which keyboard layout is selected.

Additional parameters for using the pads as a keyboard can be accessed through the **PRESET MENU**. To access the **PRESET MENU** for the sequencer, press the **Menu Button**.

Parameter	Possible Values	Information
Scale	See Appendix C - List of Modes and Scales	Offers user a list of 39 modes and scales to use playing the synth (note: this is only valid when using the pads to play the Medusa)
Layout	1-7	Layout offers 7 different intervals for how notes are laid out on the 8 x 8 GRID. Each possible value reflects the number of semitones between a pad and the pad just above it. (See 4. Using the Pads as a Keyboard for more information)
Root Note	C1-D4	Sets the root note of pad 57, letting you transpose the entire range of notes the 64 pads can play.
X Target PitchBend	See Appendix A - List of Modulation Destinations	Lets you assign a modulation target to respond to either 1) MIDI pitch bend values from an external MIDI controller or 2) side-to-side movement of a pad. Can scale the amount from 100 to 100 (can only scale positive values for pitch bend).
Y Target ModWheel	See Appendix A - List of Modulation Destinations	Lets you assign a modulation target to respond to either 1) MIDI mod wheel values from an external MIDI controller or 2) up-and-down movement of a pad. Can scale the amount from 100 to 100 (can only scale positive values for the mod wheel).

Z Target AfterTouch	See Appendix A - List of Modulation Destinations	Lets you assign a modulation target to respond to either 1) MIDI channel after-touch values from an external MIDI controller or 2) adding pressure to a pad. Can scale the amount from 100 to 100 (can only scale positive values for aftertouch).
Smoothing	ON OFF	Lets you turn ON or OFF anti-aliasing for modulations programmed into the GRID when the sequencer is playing.
Wavetable	1-20	Lets you select 20 different wavetables to use with the digital oscillators. Note that D OSC1 , D OSC2 , and D OSC3 will all use the same wavetable that is selected from this menu option, though each digital oscillator with a wavetable can be modulated independently.

Other Info

1. Saving and Loading Programs

Though the Medusa comes with 32 presets, you will no doubt want to tweak and save some of your own programs, and the Medusa will let you save up to 128 programs. Saving a program on the Medusa is very easy. When you have programmed the sound and sequence you want, press the **SAVE** button, dial the **Menu Button** to select either **Bank A** or **Bank B**, press the pad where you want it saved (any of the pads 1 through 64), and then press the **SAVE** button again. The seq OLED should say the pad number and “**saved**”. Loading the program is as simple as hitting the **LOAD** button, selecting the bank (**A** or **B**), and then hitting the pad number you want to load.)

2. Input and Output

The Medusa is equipped with both MIDI in/out/thru and USB ports, and it will respond to note, mod wheel, and pitch bend MIDI data. It will also transmit MIDI note data based on notes played on the pads, and transport start/stop messages corresponding to Medusa’s sequencer **PLAY** button. There is also a 1/4 inch jack for the main output (mono), a 1/4 inch jack for headphones, and a 1/4 inch jack for inputting an external audio signal before the Medusa filter.

3. Random Button

The **RANDOM** button lets you randomize various synth and **GRID** parameter settings as described below.

Randomize	Mode	Steps
OSC section parameters	NOTES	<ol style="list-style-type: none"> 1. Press the RANDOM button 2. Select “confirm” 3. Various synth OSC parameters including WAVE, wavetable position, OCTAVE, SYNC 2, and SYNC 3 (excluding FM) will be randomized
Sequencer notes	NOTES	<ol style="list-style-type: none"> 1. Press the REC button 2. Press the RANDOM button 3. Select “confirm” 4. Randomized notes and null values (blanks) an octave above and below the “Root Note” (set in the Pre-set Menu) will be randomly generated for all 64 pads
PM data	GRID	<ol style="list-style-type: none"> 1. Press the REC button 2. Press the RANDOM button 3. Select “selected steps” or “all steps” 4. The PM data will be randomized for the steps selected on step 3.

4. The Config Menu

The config menu is accessed by pressing the **CONFIG** button directly under the seq OLED.

Parameter	Possible Values	Information
MIDI Clock in	Internal USB MIDI	Lets you choose the incoming MIDI clock data from internal or through MIDI-out and the USB connection.
MIDI Clock out	OFF USB MIDI	Lets you choose the send of MIDI clock data through MIDI-out and the USB connection.
Transport in	OFF USB+DIN USB MIDI	Lets you choose the incoming start and stop messages from the chosen external sources.
Transport out	OFF ON	Lets you choose to send start and stop messages through MIDI-out and the USB connection.

<p>MIDI Channel In</p>	<p>ALL 1-16 OFF Channel per voice</p>	<p>Lets you select if the Medusa receives MIDI data on all channels, on one channel (1 through 16), or it doesn't receive MIDI data. Additionally - Channel per voice allows you to control, play and sequence each of Medusa's oscillators on a separate MIDI channel from 1 to 6 (fixed) with external gear. This works in P2 mode only. Please, notice that when this function is toggled on the Medusa pads won't play polyphonically.</p>
<p>MIDI Channel Out</p>	<p>OFF 1-16 MPE</p>	<p>Lets you select the channel that Medusa will transmit MIDI data out or to turn off MIDI out. There is no soft MIDI thru. MPE - is enabling MIDI Polyphonic Expression of the Medusa's pads to control external devices.</p>
<p>CC input</p>	<p>OFF USB+DIN USB MIDI</p>	<p>Determines if Medusa is receiving the MIDI CC modulation signals through MIDI and the USB connection.</p>
<p>CC output</p>	<p>OFF USB+DIN USB MIDI</p>	<p>Determines if Medusa is sending the MIDI CC modulation signals through MIDI and the USB connection.</p>
<p>Voice Priority</p>	<p>First Next</p>	<p>This setting pertains to playing in P1 or P2 mode. With Voice Priority set to First, whatever note is played will grab the first available A OSC, D OSC or pair of OSCs. If you play monophonically in P1 or P2 (one note at a time), it will only use that first oscillator. With the Voice Priority set to Next, Medusa will rotate through the available OSCs, allowing longer releases to sound.</p>
<p>Pot. Mode</p>	<p>Absolute Preset value</p>	<p>Lets you choose whether a control changes a parameter immediately (Absolute) or has to pass through the preset value before it changes (Preset value).</p>
<p>X mode</p>	<p>Absolute Relative</p>	<p>Lets you choose whether side-to-side movement of the pad fully controls/modulates the target or only relative to its initial value.</p>

Y mode	Absolute Relative	Lets you choose whether up-and-down movement of the pad fully controls/modulates the target or only relative to its initial value.
Firmware	NA	Displays installed firmware version
Credits	NA	Displays the Medusa production credits
Calibration	Cancel Start	Calibrates and tunes the analog oscillators

5. Firmware update procedure

1. Connect the Medusa to the computer using the **USB** cable.
2. Turn on the Medusa.
3. Execute the firmware loader file
(win - updateFirmware.bat, mac - Medusa_Firmware_Loader).
4. The terminal window will appear. (while the OSX terminal gives you instructions, the Windows terminal is blank, just press the reset button now).
5. Press the Reset button on the Medusa's back panel
(you'll need a paper clip to do so).
6. The Medusa will restart. You can check the firmware version in the config menu.

Important notes:

- When flashing - use no USB hubs, no adapters. Use straight connection between the instrument and the computer only. Power your laptop from the AC adapter.
- If after the update your Medusa unit would start humming, glitching or behaving strangely just toggle it off and back on after a minute or two, It will resolve the possible issue.
- In case of trouble, the flashing procedure can be repeated.
- Problems during the process (like power shortage) will not brick the unit. If for any reason your Medusa unit would go bricked, you can still flash it.

6. CC Chart

Function	CC
OSC1_TUNING	7
OSC1_U_TUNING	8
OSC1_WAVE	9
OSC1_OCTAVE	10
OSC2_TUNING	11
OSC2_U_TUNING	12
OSC2_WAVE	13
OSC2_OCTAVE	14
OSC3_TUNING	15
OSC3_U_TUNING	16
OSC3_WAVE	17
OSC3_OCTAVE	18
OSC4_TUNING	19
OSC4_U_TUNING	20
OSC4_WAVE	21
OSC4_OCTAVE	22
OSC5_TUNING	23
OSC5_U_TUNING	24
OSC5_WAVE	25
OSC5_OCTAVE	26
OSC6_TUNING	27

Function	CC
OSC6_U_TUNING	28
OSC6_WAVE	29
OSC6_OCTAVE	30
OSC3_OSC12	31
OSC3_FILTER	119
OSC_PW	33
OSC_NOISE	34
OSC_WAVETABLE	35
OSC_SYNC2	36
OSC_SYNC3	37
PLAY_MODE	38
PLAY_MODE_GLIDE	39
FILTER_CUTOFF	40
FILTER_RESONANCE	41
FILTER_TYPE	42
FILTER_TRACK	43
MIXER_OSC1_ANALOG	44
MIXER_OSC2_ANALOG	45
MIXER_OSC3_ANALOG	46
MIXER_NOISE	47
MIXER_OSC1_DIGITAL	48

Function	CC
MIXER_OSC2_DIGITAL	49
MIXER_OSC3_DIGITAL	50
ENV1_DELAY	51
ENV1_A	52
ENV1_D	53
ENV1_S	54
ENV1_R	55
ENV1_AMOUNT	56
ENV1_TARGET	57
ENV1_LOOP	58
ENV2_DELAY	59
ENV2_A	60
ENV2_D	61
ENV2_S	62
ENV2_R	63
ENV2_AMOUNT	64
ENV2_TARGET	65
ENV2_LOOP	66
ENV3_DELAY	67
ENV3_A	68
ENV3_D	69
ENV3_S	70

Function	CC
ENV3_R	71
ENV3_AMOUNT	72
ENV3_TARGET	73
ENV3_LOOP	74
ENV4_DELAY	75
ENV4_A	76
ENV4_D	77
ENV4_S	78
ENV4_R	79
ENV4_AMOUNT	80
ENV4_LOOP	82
ENV5_DELAY	83
ENV5_A	84
ENV5_D	85
ENV5_S	86
ENV5_R	87
ENV5_AMOUNT	88
ENV5_LOOP	90
LFO1_RATE	91
LFO1_WAVE	92
LFO1_AMOUNT	93
LFO1_TARGET	94

Function	CC
LFO1_SYNC	95
LFO2_RATE	96
LFO2_WAVE	97
LFO2_AMOUNT	98
LFO2_TARGET	99
LFO2_SYNC	100
LFO3_RATE	101
LFO3_WAVE	102
LFO3_AMOUNT	103
LFO3_TARGET	104
LFO3_SYNC	105
LFO4_RATE	106
LFO4_WAVE	107
LFO4_AMOUNT	108
LFO4_TARGET	109
LFO4_SYNC	110
LFO5_RATE	111
LFO5_WAVE	112
LFO5_AMOUNT	113
LFO5_TARGET	114
LFO5_SYNC	115
TARGET_X_SELECT	116

Function	CC
TARGET_Y_SELECT	117
TARGET_Z_SELECT	118
TARGET_Y_VALUE	1

Appendices

Appendix A - List of Modulation Destinations

Destination	What will be modulated
None	Nothing
Pitch	Frequency or pitch of all 6 oscillators
Amp	Overall amplitude of all 6 oscillators
Cutoff	Cutoff frequency of the filter
Resonance	Resonance of the filter
FM Osc 1,2	Frequency modulation amount for OSC 1 and 2
FM Filter	Frequency modulation amount for the filter
Pulse Width	Pulse width of the 3 analog oscillators
Wavetable all	Position in the wavetable for all digital oscillators
Wavetable D1	Position in the wavetable for all D OSC1
Wavetable D2	Position in the wavetable for all D OSC2
Wavetable D3	Position in the wavetable for all D OSC3
A Osc1 Freq	Frequency or pitch of A OSC1
A Osc2 Freq	Frequency or pitch of A OSC2
A Osc3 Freq	Frequency or pitch of A OSC3
D Osc1 Freq	Frequency or pitch of D OSC1

D Osc2 Freq	Frequency or pitch of D OSC2
D Osc3 Freq	Frequency or pitch of D OSC3
Noise Color	Mix of high pass and low pass filtering of the noise source
A Osc1 Mix	Amount of A OSC1 signal in the overall mix
A Osc2 Mix	Amount of A OSC2 signal in the overall mix
A Osc3 Mix	Amount of A OSC2 signal in the overall mix
D Osc1 Mix	Amount of D OSC1 signal in the overall mix
D Osc2 Mix	Amount of D OSC2 signal in the overall mix
D Osc3 Mix	Amount of D OSC3 signal in the overall mix
Noise Mix	Amount of noise source signal in the overall mix
LFO1 Rate	Rate (cycles per second) of LFO1 wave
LFO2 Rate	Rate (cycles per second) of LFO2 wave
LFO3 Rate	Rate (cycles per second) of LFO3 wave
LFO4 Rate	Rate (cycles per second) of LFO4 wave
LFO5 Rate	Rate (cycles per second) of LFO5 wave
LFO1 Wave	Shape of the LFO1 wave
LFO2 Wave	Shape of the LFO2 wave
LFO3 Wave	Shape of the LFO3 wave
LFO4 Wave	Shape of the LFO4 wave
LFO5 Wave	Shape of the LFO5 wave

Appendix B - List of Modes and Scales

Number	Full Name	Abbreviation
0	NA	No scale
1	Chromatic	Chromatic
2	Minor	Minor
3	Major	Major
4	Dorian	Dorian
5	Lydian	Lyd Maj
6	Lydian Minor	Lyd Min
7	Locrian	Locrian
8	Phrygian	Phrygian
9	Phrygian Dominant	PhrygDom
10	Mixolydian	Mixolydian
11	Melodic Minor	Melo Min
12	Harmonic Minor	Harm Min
13	BeBop Major	BeBopMaj
14	BeBop Dorian	BeBopDor
15	BeBop Mixlydian	BeBopMix
16	Blues Minor	Blues Min
17	Blues Major	Blues Maj
18	Pentatonic Minor	Penta Min
19	Pentatonic Major	Penta Maj
20	Hungarian Minor	Hung Min
21	Ukrainian	Ukrainian
22	Marva	Marva
23	Todi	Todi
24	Whole Tone	Wholetone
25	Diminished	Dim
26	Super Locrian	SLocrian
27	Hirajoshi	Hirajoshi
28	In Sen	In Sen

29	Yo	Yo
30	Iwato	Iwato
31	Whole Half	WholeHalf
32	Kumoi	Kumoi
33	Overtone	Overtone
34	Double Harmonic	DoubHarm
35	Indian	Indian
36	Gypsy	Gypsy
37	Neapolitan	NeapoMaj
38	Neapolitan Minor	NeapoMin
39	Enigmatic	Enigmatic