Owner's Manual

medusa

HYBRID SYNTHESIZER

Polyend

dre::adbox

Contents

MEDUSA

HYBRID SYNTHESIZER

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

enjoy

MEDUSA

HYBRID SYNTHESIZER
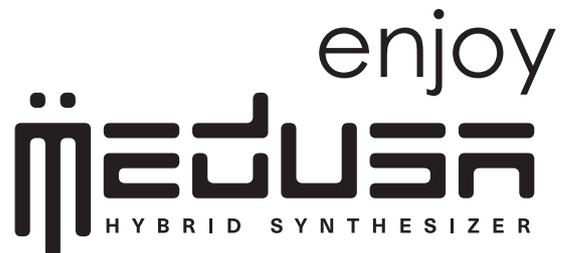
* manual calibration
CONFIG > Calibration > Start
When the Calibration is completed, press CONFIG to return back

Schematic Diagram

VCO FM

A VCO1 A VCO2 A VCO3

Sync Sync

NOISE

D OSC1 D OSC2 D OSC3

VCA VCA VCA VCA VCA VCA VCA

VCF FM

MIXER EXTR IN

VCF

VCA

Main Out Headphones Out
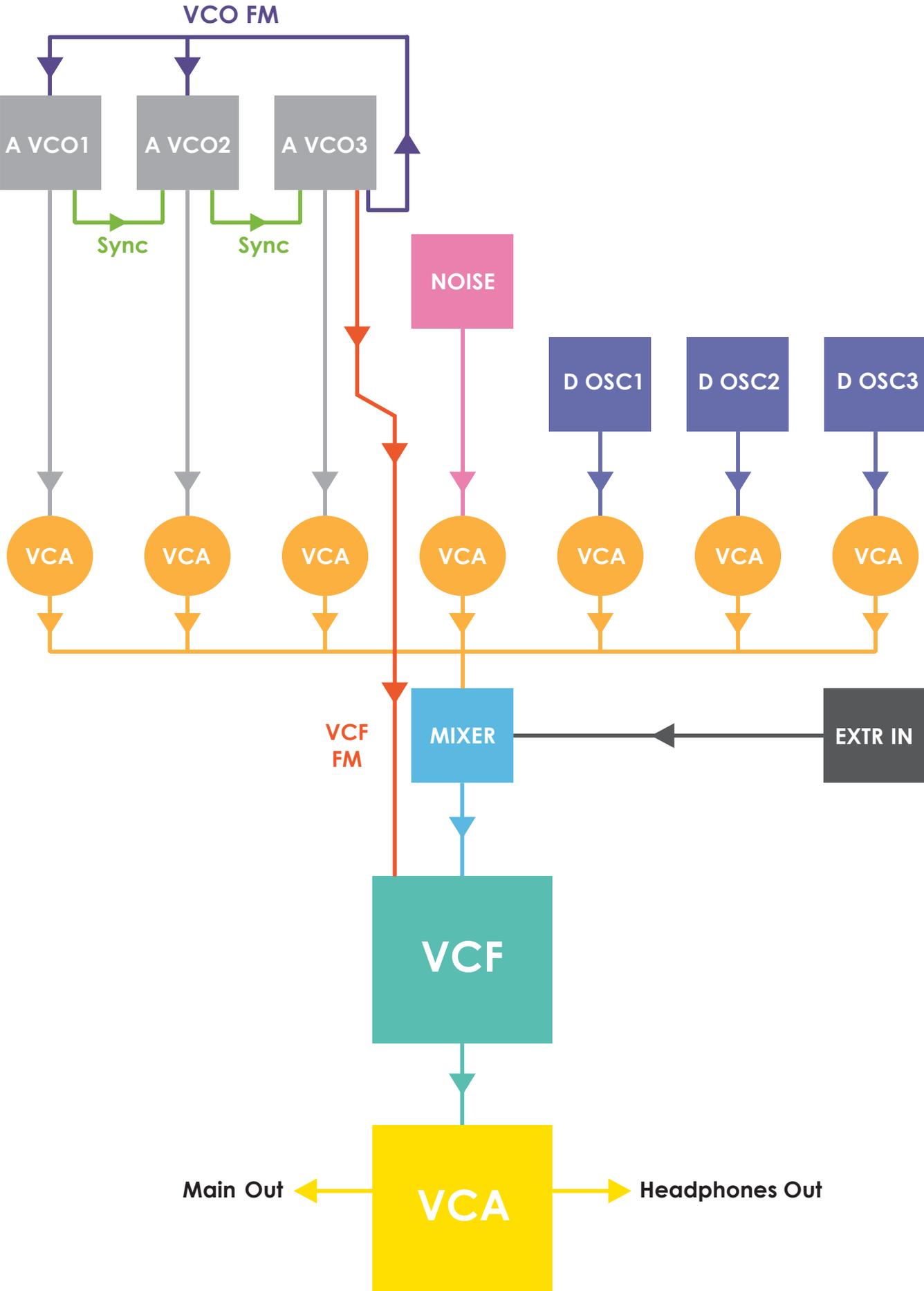
Manual

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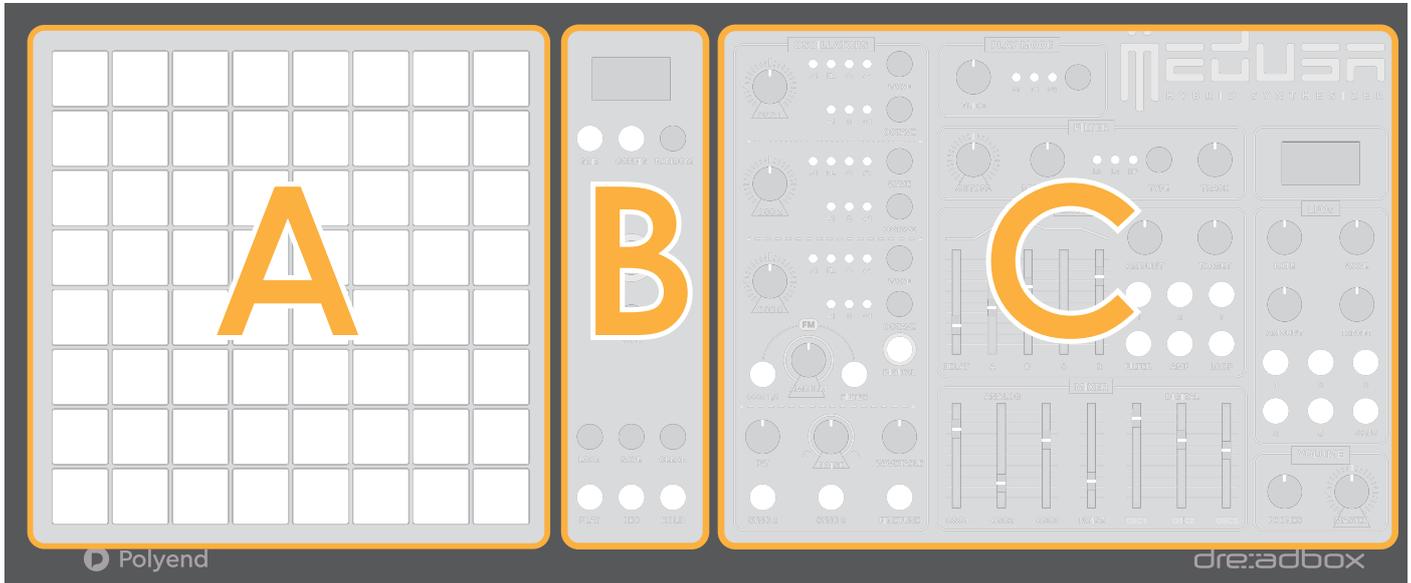
The Medusa has 3 main sections for working with the synthesizer and sequencer.

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

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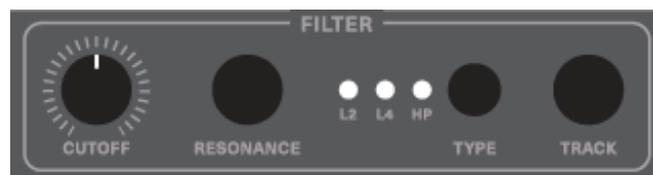
Use the **CUTOFF** dial to control the cutoff frequency of the filter, the **RESONANCE** knob to apply resonance to the filter, and lastly use the **TRACK** knob to adjust how much or how little the filter tracks to the keyboard.

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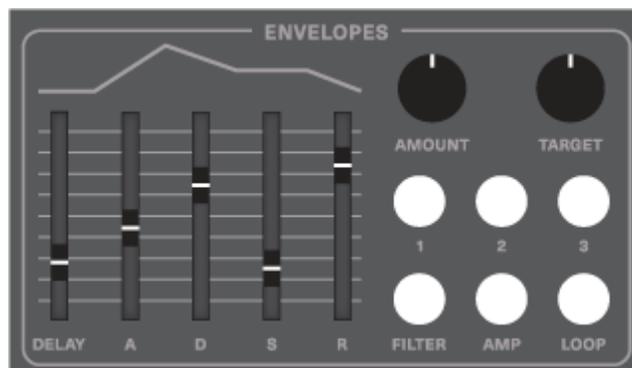
To activate and use envelope **1, 2, 3,** or the **FILTER** envelope (the **AMP** envelope is always on), double click the corresponding button, and the synth OLED will show the word "ON". To turn off an envelope, simply double click it again.

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.

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.
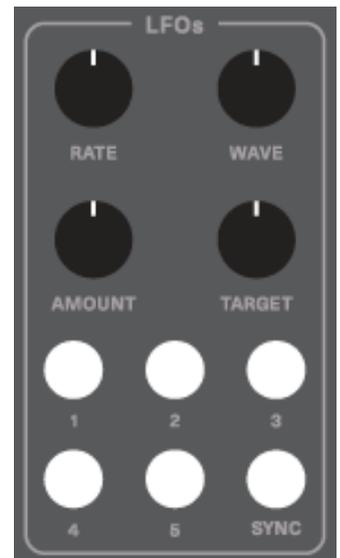
The buttons numbered **1** through **5** let you quickly select each of the independent **LFOs**, and the 4 knobs let you control the **LFO RATE**, the **LFO WAVE**, the **LFO AMOUNT** (amplitude), and the modulation **TARGET** for each of the **LFOs**. When lit, the **SYNC** button will force the **LFOs** 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.
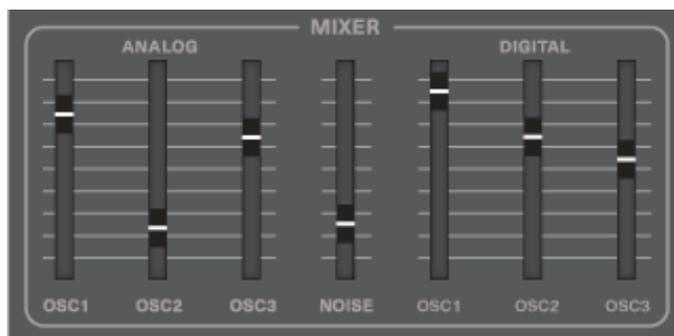
The **PHONES** knob lets you control the volume for headphones plugged into the headphone jack, and the **MASTER** dial lets you control the volume from the line out on the back of the Medusa.

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).

All the Data Saved in a Medusa Program

GRID Data

Notes Data
(for the sequencer)
C2, D2, F#2, E2, D3, etc.

Patch Modifying Data
- Waveforms
- Filter Cutoff
- Resonance
- Amp Envelope Settings
- Filter Envelope Settings
- LFO target
  and so on...

Patch Data

- Waveforms
- Filter Cutoff
- Resonance
- Amp Envelope Settings
- Filter Envelope Settings
- LFO target
- LFO rate
- LFO amount
- PW
- FM amount
- Mixer OSC1
- Mixer OSC2
  and so on...

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.

NOTE: C2	NOTE: D2	NOTE: none	NOTE: E3
PM DATA: Cutoff=64 Resonance=52 Amp=127 ...	PM DATA: None	PM DATA: Cutoff=33 Resonance=52 FM Filter=48 ...	PM DATA: Cutoff=32 Resonance=52 Amp=88 ...

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.
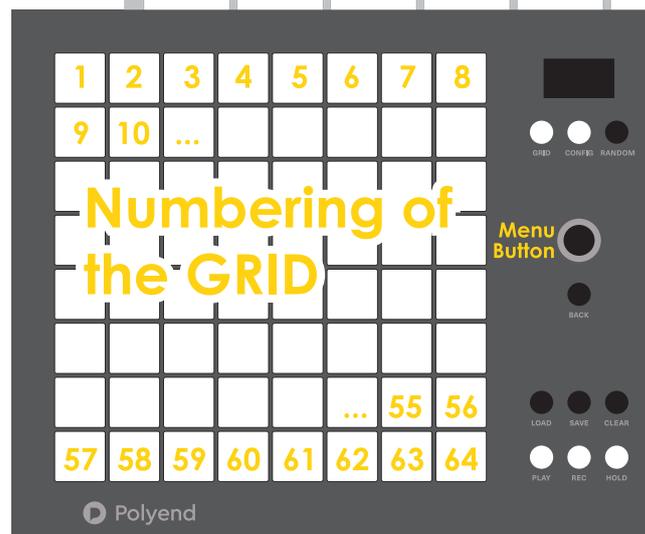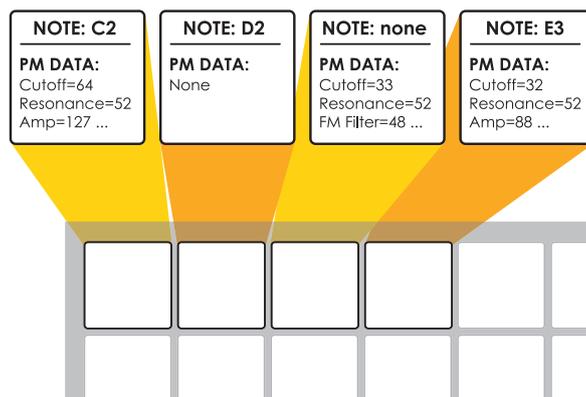
2. Two Modes: Grid and Notes

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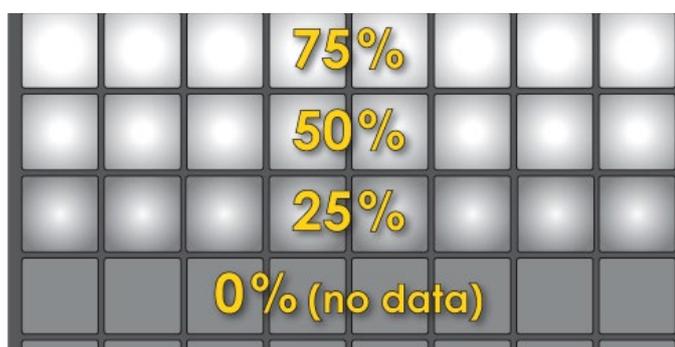
The **GRID mode** also offers an easy way to see where both **NOTE** and **Patch Modifying Data** are stored in the 8 x 8 grid. In **GRID** mode, if a pad is lit:

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

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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**	**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) **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) **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) **Random -** the sequence endlessly loops, randomly picky values from the total sequence length (e.g. 3-1-2-3, 4-1-2-1, 2-4-2-3, etc)

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. 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	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	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	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	You can edit notes from both the **NOTES** mode and the **GRID** mode. From the **NOTES** mode: 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. From the **GRID** mode: 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.

Copy sequencer notes and PM data (from one step or pad to another)	GRID	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"**)
Start/Stop sequencer	Either	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.
Enter PM data	GRID	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.
Edit PM data	GRID	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.

Delete PM data	GRID	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.
Delete sequencer notes (NOTES data)	GRID	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).

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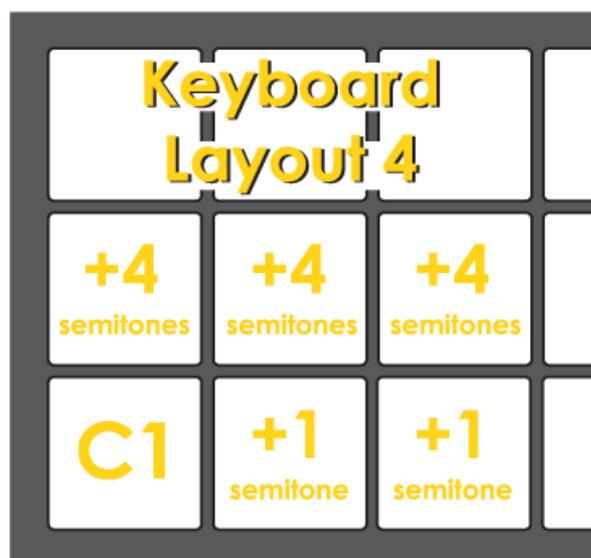
When not in **GRID** mode (when the pads are behaving like a keyboard), the pads corresponding to the root and octave notes will be lit, letting you know which keyboard layout is selected.

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 OSC1,** 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	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	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 **Preset Menu**) will be randomly generated for all 64 pads
PM data	GRID	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
Clock out	**OFF** **ON**	Lets you choose to send MIDI clock data through MIDI-out and the USB connection.
Transport out	**OFF** **ON**	Lets you choose to send start and stop messages through MIDI-out and the USB connection.
MIDI Channel In	**ALL** **1-16** **OFF**	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.
MIDI Channel Out	**OFF** **1-16**	Lets you select the channel the Medusa will transmit MIDI data out or to turn off MIDI out. There is no soft MIDI thru.

Voice Priority	**First** **Next**	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.
Pot. Mode	**Absolute** **Preset value**	Lets you choose whether a control changes a parameter immediately (**Absolute**) or has to pass through the preset value before it changes (**Preset value**).
X mode	**Absolute** **Relative**	Lets you choose whether side-to-side movement of the pad fully controls/modulates the target or only relative to its initial value.
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

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	Menu Name
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

Appendix C - List of Presets

Patch Location	Name
A1	init
A2	theremin (MPE, grid micro tuning scale)
A3	dubstep 1
A4	fav
A5	stinson
A6	fat bass
A7	sync bass
A8	bass seq 1
A9	bass seq 2
A10	bass seq 3
A11	dubstep 2
A12	chord bass 1
A13	chord bass2
A14	rich lead guitar
A15	space lead

A16	poly one
A17	chord seq 1
A18	chord seq 2
A19	chord seq 3
A20	chord
A21	chord bank 1 (grid chord progressions)
A22	chord bank 2 (grid chord progressions)
A23	church
A24	sinus melody
A25	nostalgia
A26	prophecy
A27	arp
A28	juno poly
A29	6 voice
A30	maybe
A31	a yeah
A32	final fantasy