Teenage Engineering OP-Z1

Multimedia synthesizer & sequencer

User Guide v 1.0

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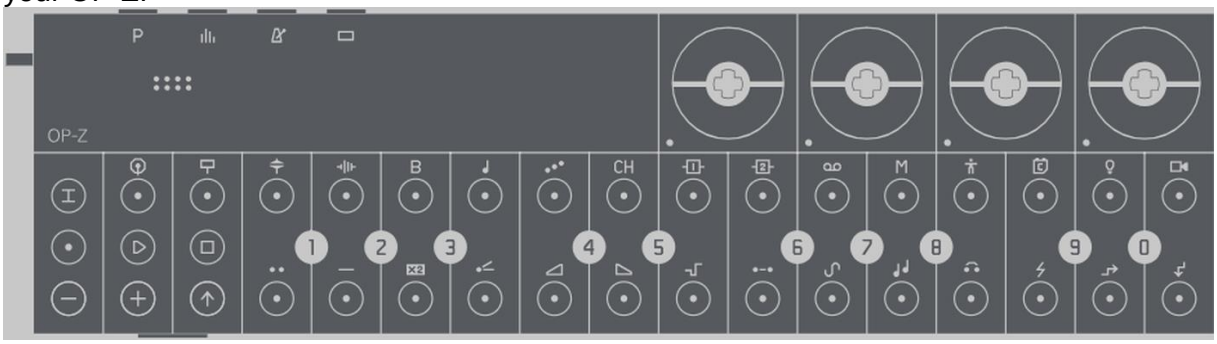
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1 Quick Guide

A good way to get you started is to follow the quick guide and colored overlays that comes with your OP-Z.



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1.1 Power on

- Turn the yellow knob clockwise to turn on the OP-Z.
  After the startup sound the unit is ready to be used.
- Keep turning to adjust the master volume.

1.2 Charge

Connect the included USB cable to the unit and charge it using a computer or any charger with a USB port.
Holding screen, the amount of lit led lights indicate from 1 to 16 how much battery is left.

1.3 Pair

To pair the unit with the OP–Z app activate ble on your device and open the OP–Z app.

- In the app, go to "devices" and press "scan".
- Push the button on the back of OP–Z and press "connect" in the app.
  The led will be blinking blue when available for pairing, and solid green when paired.

1.4 Start

Use the colored overlays that came with the packaging to optimize this quick guide tour.

- In the app go to 'OP-Z' to access the interface.
- Start the sequencer by pressing **PLAY** to listen to the current pattern and OP-Z is now in play mode.
- Press **STOP** to pause the music.

1.5 Select project

Each project contains 16 patterns and the first pattern is selected by default.

- Press and hold **PROJECT** and press 0-9 to select a project.
  On your new unit, project 0 is empty and a good option when starting to build your own patterns.

1.6 Select track

Each pattern contains 16 tracks.

- Press and hold **TRACK** and press **KICK** to select the kick track.
  The active track is indicated by a white led when holding the **TRACK** selection button.

1.7 Place notes

- Use the **piano keys** on the musical keyboard to find a sound you like.
- The latest played sound can be placed in the sequencer by pressing the "step"**1-16** buttons. Use the second overlay as an example of where to place the notes.
- Do the same with snare, percussion and bass. Select the tracks, find sounds and place them in the sequencer.
  This is called step programming.

1.8 Record live

In addition to step programming you can also record live.

- Select the lead track, and while in "play" mode, hold **REC** and play notes on the **musical keyboard**.
  The notes will be placed in the sequencer according to your own free timing.
- Press and hold **TRACK** together with **STOP** for a second if you want to clear the current track and record again.

1.9 Quantize

- To gradually quantize notes on the currently selected track hold **TRACK** and turn the **yellow dial**.

1.10 Glide

- If you want to add glide or Portamento between notes, again on the currently selected track, hold **TRACK** and turn the red dial.

1.11 Change tempo

- Press and hold **TEMPO** + Turn the **green dial** to adjust the bpm to your liking, between 40–200 bpm.
- You can also hold **TEMPO** and press the numbers **0-9** corresponding to the bpm you want.
- Finally you can tap tempo by holding **TEMPO** and tapping any of the **white piano keys**.

1.12 “Step components”

Each step can have its own “step components”, adding unique playback behavior per step.

- Select a step, select a component and adjust settings, 0-9.

Example: let's trigger a step every fourth cycle. Select the snare track by holding **TRACK** and **SNARE**.

- ➢ Hold **SHIFT** and press the 2 **last** “step”**1-16** on the sequencer.
- ➢ Keep holding **SHIFT** and press the last “step component” **key**.
- ➢ Now press 9.

See chart § 2.6.4 au-dessous for a reference of all the “step components”.

1.13 Punch-in effects

Now that you have created a pattern it's time to punch in some effects. Hold **TRACK** and press **PERC** to select that track.

- While in “play” mode press and hold **SHIFT** and momentarily hold the **piano keys** to add different punch-in effects.
- If also holding **REC** the punch-in effects will be recorded and stored to the performance track.

1.14 Performance mode

Performance mode works like punch-in effects except you don't have to hold **SHIFT** and all tracks are affected.

- Hold **TRACK** and press **PERFORM** to go to performance mode.
- While in “play” mode press the **piano keys** to add punch-in effects.

Any recorded effects are stored to the steps and can be cleared by pressing the corresponding steps again.

1.15 “Color dials” 1-4

The “color dials”**1-4** are used to adjust the parameters of OP-Z.

- Turning a dial on an audio track will affect the sound of that track.
- By holding a “step”**1-16** and turning the “color dials”**1-4** you lock the corresponding parameters to that specific step.

1.16 Parameter pages

Each track can have multiple pages of parameters.

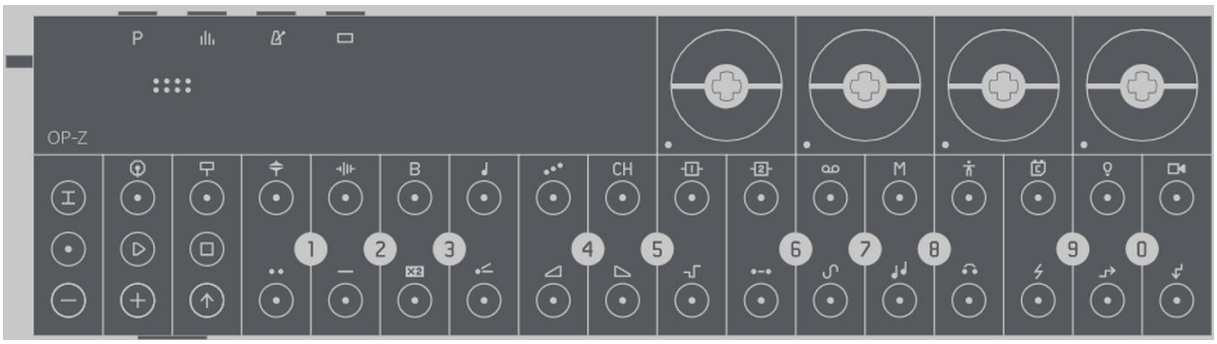
- Press **SHIFT** to toggle page.
  Each page is color coded so you always know what you’re controlling.

See chart § 2.4.3 au-dessous for reference of parameter pages.

1.17 More controls

- By holding **TRACK** or top “index buttons” and turning “color dials”**1-4** you get access to even more controls.
- Holding **TRACK** lets you control default note length, “play” mode, quantization and glide for the active track.
- Holding **MIXER** controls drum and synth bus levels, global compressor and global level.
- Hold **TEMPO** to adjust bpm, swing, and the sound and level of the metronome.
  See chart § 2.4.3 au-dessous for reference.

2 User Guide



What's in the box?

Check that the following items are included when you open the box

- ✓ OP-Z unit
- ✓ OP-Z quick guide
  Use this to get started creating your first pattern, and as a reference guide for buttons, parameters and "step components".
- ✓ OP-Z cheat sheets
  Overlays to accompany the quick guide.
- ✓ USB -c cable
  Standard USB to USB-c cable for midi, for data transfer between OP-Z and computer, and for charging the OP-Z internal battery.

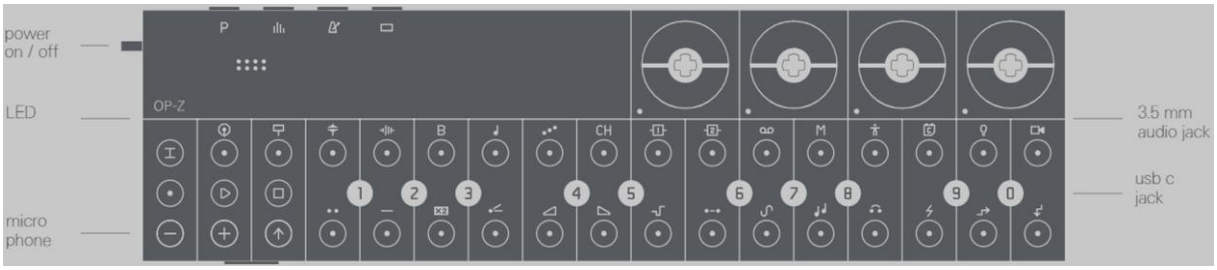
Warnings & important notes

Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices. If you need to connect/disconnect wires during use, always make sure to connect the cable to the OP-Z first. never connect the 3.5mm plugs going from the OP-Z's input or output to a mic input on a sound card with phantom power active. This could destroy the ports on the OP-Z. Be sure to charge the unit using only 5v USB power, such as that from the USB ports of a computer, or by using a dedicated USB charger. Make sure you always have the OP-Z placed so it is level and sure to remain stable. Use your OP-Z where the ambient temperature is between 10° and 35° C (50° and 95° F) and the relative humidity is between 0 and 95%RH. Never install or use the unit in any of the following locations:

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2.1 Hardware overview



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2.1.1 Power on / off

- To power on your OP-Z, turn the yellow knob located on the left side of the unit clockwise, until you feel and hear a click
  The "track LEDs"**1-16** will light up in a rainbow pattern and the internal speaker will play a startup sound. OP-Z is now ready to be used.
- Keep turning the knob to adjust the master volume
  Always make sure to be careful with your ears.
- To power off OP-Z, turn the knob counterclockwise, past the click.

Note: all OP-Z data is stored on-the-fly, so everything will still be there next time you power on your unit.

It's a good habit to occasionally back-up OP-Z using disk mode.

2.1.2 Charging the battery

OP-Z has an internal rechargeable battery which can be charged using the included USB-c cable. Connect the unit to a computer or any standard USB charger.
Keep OP-Z connected for as long as you want to charge. While charging and turned off the **motion LED** will be blinking green.
When connected and fully charged the **motion led** will be solid green.

- To check the battery level press and hold **SCREEN**
  The "track LED"**1-16** lights will light up to indicate the charge level, from 1 to 16.

Note: when paired with the app, battery level is shown in the main interface.

Pro-tip: USB charging can be disabled by holding **SCREEN** and pressing **e2** (the right- most **piano key**). This can sometimes cancel noise related to USB.

When holding **SCREEN** in this mode the "track led"**1-16** lights are yellow.

2.1.3 Replacing the battery

The internal battery is easy to replace. Simply remove the back plate to access it.
OP-Z uses a custom battery design. Do not attempt to use any other battery to power your unit.
Replacement / backup batteries are sold separately.

2.1.4 Inputs and outputs

In its standard configuration OP-Z has two ports located on the right hand side of the unit:

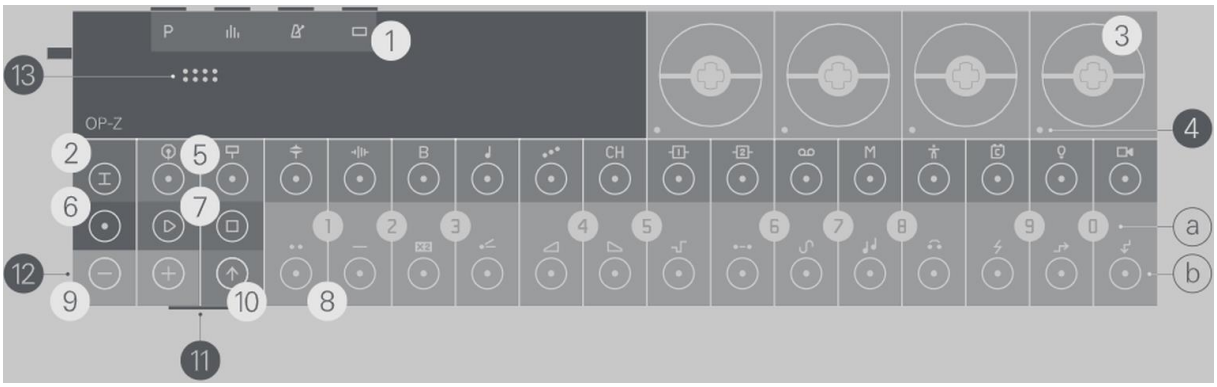
- Main audio for headphones, headset or line out.
- USB-c port for charging, file transfers and midi.

- On the top side you find four expansion ports, for use with a physical hardware module (sold separately).
  More info about the modules and how to expand the hardware will be available soon.
- On the left side, next to the volume knob, is the microphone and mic led indicator.

Read more about how to use the microphone here § 2.2.13 au-dessous.

Note: make sure never to feed phantom power in to OP-Z as this will damage the electronics and void

2.2 Interface overview



The OP-Z interface can be divided into different sections for easy reading and intuitive workflow.
All the main sections are listed above, with links to their own chapters below.
Click on a section to find out more about its use and operation.
The “OP-Z app” is covered in a chapter of its own.

- 1. Index buttons: **project**, **Mixer**, **tempo**, **screen**
- 2. **Track** select button
- 3. Color dials: **green**, **blue**, **yellow**, **red**
- 4. Parameter LEDs
- 5. “Tracks” **1-16**: audio tracks, control tracks, patterns, step buttons
- 6. **Rec**ord button
- 7. Transport buttons: **play**, **stop**
- 8. Musical keyboard: / **piano keys**, **value keys** [a], **component keys** [b]
- 9. “Transpose” **-/+** buttons:
- 10. **Shift** button
- 11. **Pitch bend**
- 12. Microphone
- 13. Speaker

The main OP-Z functionality can be arranged into the following hierarchy:

projects	patterns	tracks	steps
10 projects	16 patterns per project	16 tracks per pattern	16 steps per track
14 pattern chains / project			14 step components
10 mute groups / project			24 ticks per step

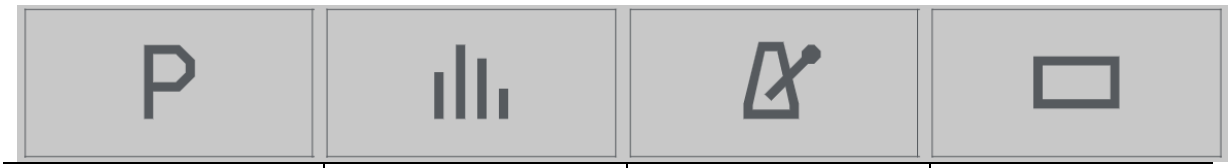
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2.2.1 *"Index buttons"* ***1-4***

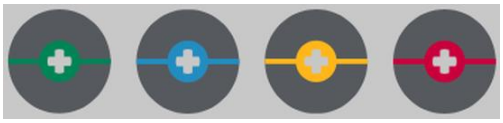
The four index buttons are central for operating your OP-Z. They have a lot of usage and are presented below, with links to each individual chapter for detailed information.

- Generally press and hold the buttons to toggle their unique temporary context for the interface.



project The **PROJECT** button is used for selecting projects, patterns and slots, as well as for certain power functions. Read more here § 2.7 au-dessous.	Mixer **MIXER** is used for muting/unmuting tracks, for group and master gain control and for the master compressor. Read more here § 2.8 au-dessous.	Tempo The **TEMPO** button is used for tempo / bpm, swing and metronome settings. read more here § 2.9 au-dessous	screen Hold the **SCREEN** button to display the battery charge, to navigate the app and to activate photometric

2.2.2 *"Color dials"* ***1-4***



There are four color coded endless dials which are often used in combinations with other buttons.

- Turning the "color dials"**1-4** is the main way to control the parameters of OP-Z.

Generally there are four different pages for these "dials", allowing each dial to control a number of settings.
Read more about the "color dials" and parameter pages here § 2.22 au-dessous.

2.2.3 *"Parameter LEDs"* ***1-4***



The led next to each dial is used to show the value of the corresponding dial, in any of the following ways:	A gradual min – max level, where led brightness represent dial value	A gradual min – max level, with a default / neutral / mid green state at 50 %	Through different color segments, for toggled static values

2.2.4 Parameter pages

Each track can have up to 4 pages of parameters.
Each page is color coded so you always know what you're controlling.
Learning these colors will help you to navigate the interface and to find the setting you want.

- Press and release **SHIFT** to toggle parameter page.

See chart § 2.4.3 au-dessous for detailed info

2.2.5 ***Track*** select button



Use the **TRACK** select button or just "tracks" **1-16** to select which track is active



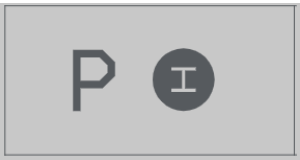
Press **TRACK** + any of the "tracks" **1-16** buttons to select that track
The currently selected track is indicated by a "white LED"**1-16** when track is held

See the "track" chapter § 2.5 au-dessous for more information.

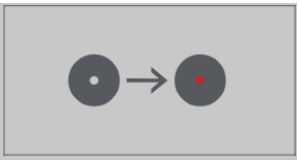
2.2.6 Tracks / patterns / step buttons



The 16 top row buttons act both as "tracks" buttons, as "pattern select" buttons and as "steps" in the sequencer
The functionality depend on what button combination you are pressing



Holding **PROJECT** will allow you to select patterns, while holding **TRACK** will allow you to select track



Pressing them alone will place a trigger on a step in the sequencer

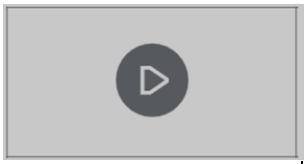
2.2.7 Record button



- The record button, **REC** , is used for recording events into the sequencer.

Read about the different ways to record here § 2.3.6 au-dessous.

2.2.8 Transport buttons



Play
Press **PLAY** to start playback from the start of the active pattern. While playing



Stop
Press **STOP** while the sequencer is playing to stop playback



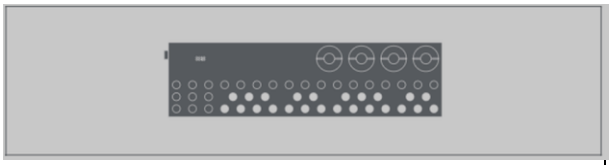
Panic
Press **STOP** while sequencer is stopped to end all active notes

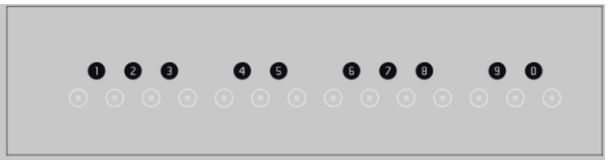


Super Panic
Pressing **STOP** twice while sequencer is stopped will also

you can press play to restart playback			clear all audio buffers

2.2.9 Musical keyboard

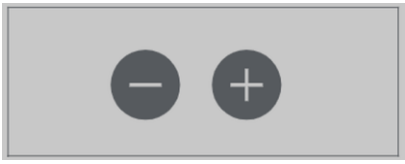




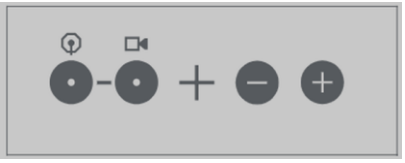
OP-Z features a two octave musical keyboard, used for playing and programming the unit.
Use the **piano keys** to trigger and play sounds from the currently selected track

The keyboard and its **piano keys** can be divided into 2 sections.
The **black keys** are also called **value keys**, and the **white keys** are also called **component keys**

2.2.10 "Transpose" -/+ buttons

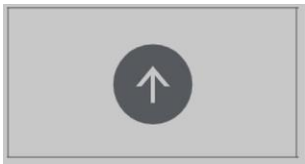




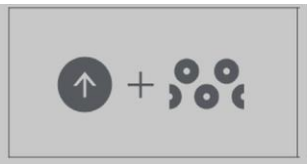


change octave Press **–/+** to transpose the musical keyboard, and change the current octave, visualized by the **value keys**	offset track Press **TRACK** + **–/+** to shift all notes on the active track one step left or right	offset steps / micro timing Press and hold a "step" **1-16** and repeatedly press **–/+** to shift timing of that step, 1 tick back or forth, visualized by a "purple LED"1-16 next to the active step. Each step has a resolution of 24 ticks. Pro-tip: the more purple the led, the further the trigger is from step center

2.2.11 *SHIFT* Button









The **SHIFT** button is often used in combination with other buttons. there is a difference between holding and momentarily pressing **SHIFT**	Next parameter page Press and release **SHIFT** to toggle parameter page, indicated by different color parameter LEDs.	Add punch-in effects Press and hold **SHIFT** and the **piano keys** to momentarily add punch-in effects on the active track	Pro-tip: use **SHIFT** combined with the "color dials"1-4 for temporary tweaking of a parameter. Release **SHIFT** to revert back to previous setting. This is great when live jamming!

*2.2.12 **Pitch bend***



- Applying pressure to the **Pitch bend** control will allow you to gradually change pitch of the current selected audio track.
- You can also use it on the tape track and master track.

Pro-tip: try using “pitch bend” on the tape track to add a live tape stop effect.

Pro-tip: holding a lit “step”**1-16** and using the “pitch bend” lets you modify the velocity for that step.

2.2.13 Microphone

OP-Z features a built-in microphone and can also be used together with a headset.

Read about this here § 2.17 au-dessous.

2.2.14 Speaker

The built-in speaker on OP-Z is used to play the startup sound, and to play the main sound, if no headphones or speakers are connected in the line out.

- Control the volume of the built in speaker using the main volume knob.

2.3 General operation

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2.3.1 Playing notes



- Use the two octave keyboard to play notes on the currently selected track.

2.3.2 Playback



play

Press **PLAY** to start playback from the start of the active pattern. While playing you can press play to restart playback

stop

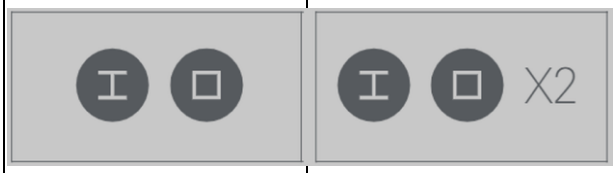
Press **STOP** while the sequencer is playing to stop playback

panic

Press **STOP** while sequencer is stopped to end all active notes

super panic

Pressing **STOP** twice while sequencer is stopped will also clear all audio buffers



track panic

Hold **TRACK** and press **STOP** to fade out hanging notes on the active track

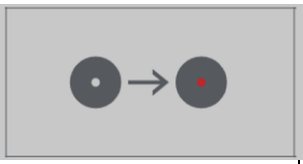
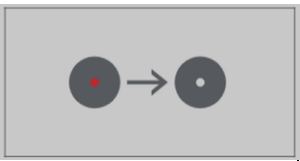
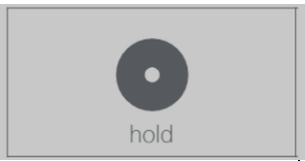
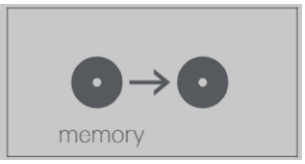
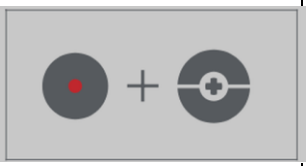
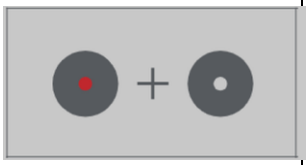
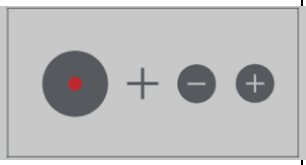
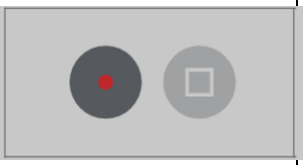
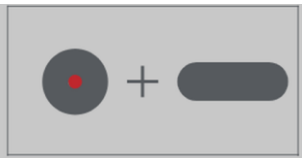
track super panic

Hold **TRACK** and press **STOP** twice to kill sound on the active track

2.3.3 Editing

There are many ways to edit your recorded or programmed material. Here is an overview of the various edit operations.

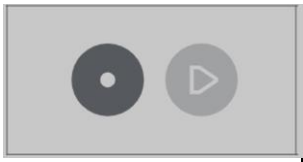
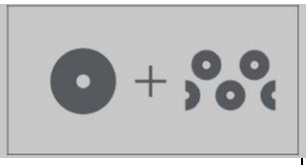
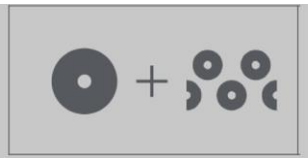
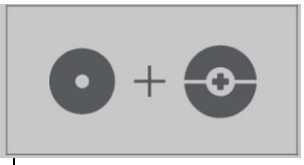
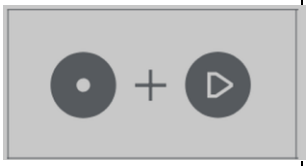
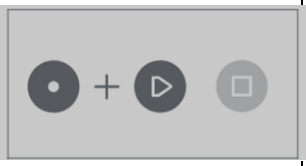
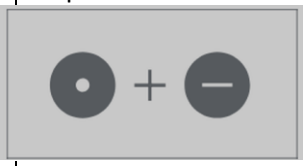
2.3.4 Editing operations

			
add note Press an empty step to add the last played note to that step	clear step Press a lit “step”**1-16** (indicated by red light) to clear it	copy step Press and hold a lit “step”**1-16** to copy it to memory Copying another note or playing a note using the musical keyboard replaces the copied step in memory	paste step Whenever a step is copied to memory, pressing any empty “step”**1-16** will paste it
			
edit step note Hold a lit “step”**1-16** and press notes to change the notes for that step	add parameter lock Hold a lit “step”**1-16** and turn any dial to set or edit the dial parameter for that step	clear parameter locks Hold **REC** and **STOP** and wait until all “steps”**1-16** are lit. This will clear all parameter locks on the current track. release before to abort To clear parameter locks per step hold the “step”**1-16** and hold **STOP** until all “steps”**1-16** are lit	clear track Hold **TRACK** and **STOP** and wait until all “step lights”**1-16** are lit. This will clear all triggers on the current track. Release before to abort
			
note length Hold a lit “step”**1-16** and press another “step”**1-16** to set the duration of the held step	micro timing Press and hold a “step”**1-16** and press **–/+** to shift timing of that step 1 tick back or forward each step has a resolution of 24 ticks	preview step Holding a lit “step”**1-16** while the sequencer is stopped will play a preview of that step, as well as copy it to memory	change velocity Hold a lit “step”**1-16** and use the **pitch bend** to modify the velocity for that step

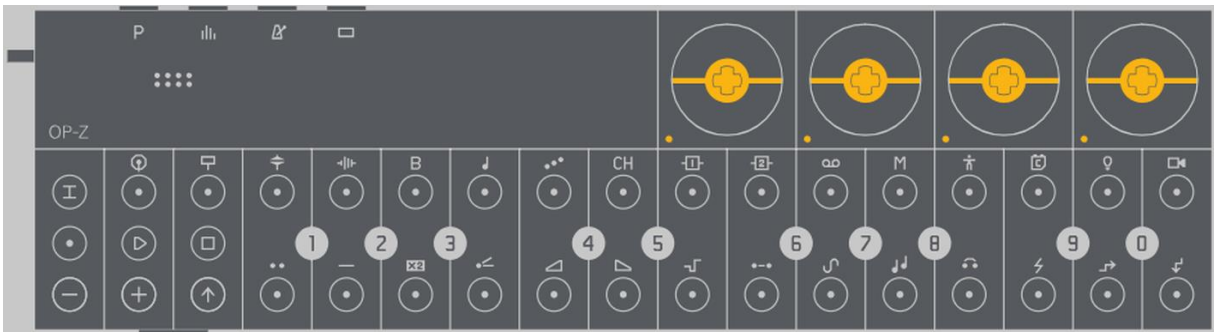
2.3.5 Recording

One of the most powerful features of the OP-Z is its many possibilities to record your tweaks and operations, whether it is through live recording or through careful step by step recording.

2.3.6 How to record

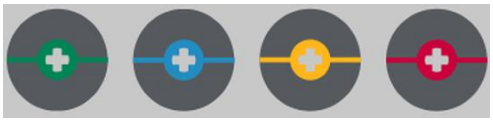
			
The record button The record button, or **REC** is used for example when live recording events into the sequencer	Record Hold record while the sequencer is running to record all input from the **piano keys**	Step by step recording Hold **REC** while the sequencer is stopped and use the musical keyboard to record notes step by step	Parameter lock Hold record and turn a dial while the sequencer is running to record that parameter to the steps
			
Record lock Hold **REC** + **PLAY** to lock recording mode. All input is recorded without the need for holding down **REC**	Record arm If the sequencer is stopped when holding **REC** + **PLAY** then recording will be armed and any note will start record lock mode	Release record lock Press **PLAY** or **STOP** to release record lock if engaged	Qubtractive recording Press – while holding **REC** for subtractive recording mode. Held notes will now be removed from active steps

2.4 Parameter pages



2.4.1 INTRODUCTION TO PARAMETER PAGES 16
2.4.2 TOGGLE PAGES 16
2.4.3 REFERENCE CHART 17

2.4.1 Introduction to parameter pages



There are four color coded endless “color dials”**1-4** and the tracks can have up to four pages of parameters, each having its unique color. By learning to navigate these pages you'll become fluent with the OP-Z in no time

- Turning the “coloror dials”**1-4** is the main way to control the parameters of OP-Z.

2.4.2 Toggle pages



- Press and release **SHIFT** to toggle parameter page.
  The parameter “led lights” indicate by color which page you are on.

2.4.3 Reference chart

This chart shows what is affected on each parameter when in different pages. The pages are illustrated by color and the features change depending on track.

kick / snare / hihat / perc

led color	green dial	blue dial	yellow dial	red dial
○	pitch	reverse	filter	resonance
●	attack	decay	sustain	release
●	lfo amount	lfo speed	lfo target	lfo shape
●	fx1 send	fx2 send	pan	level

bass / lead / chord

led color	green dial	blue dial	yellow dial	red dial
○	param 1	param 2	filter	resonance
●	attack	decay	sustain	release
●	lfo amount	lfo speed	lfo target	lfo shape
●	fx1 send	fx2 send	pan	level

arp

led color	green dial	blue dial	yellow dial	red dial
○	param 1	param 2	filter	resonance
●	attack	decay	sustain	release
●	arp speed	arp pattern	arp style	arp range
●	fx1 send	fx2 send	pan	level

fx1 fx2

led color	green dial	blue dial	yellow dial	red dial
○	param 1	param 2	filter	resonance

tape

led color	green dial	blue dial	yellow dial	red dial
○	speed	fine tune	filter	resonance
●	fx1 send	fx2 send	pan	level

master

led color	green dial	blue dial	yellow dial	red dial
○	chorus	drive	filter	resonance

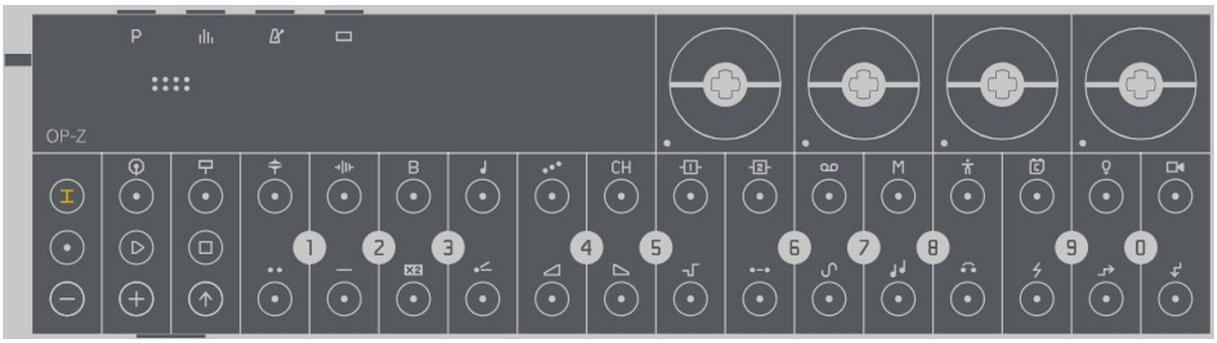
module motion

led color	green dial	blue dial	yellow dial	red dial
○	1	2	3	4
●	5	6	7	8
●	9	10	11	12
●	13	14	15	16

lights

led color	green dial	blue dial	yellow dial	red dial
○	color	alt color	speed	intensity
●	5	6	7	8

2.5 Track



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2.5.9 KILL TRACK NOTES 20
2.5.10 LINK / UNLINK TRACKS 20

2.5.1 Track introduction

The track select button, or **TRACK**, is an important button with a lot of functionality. Its main use is for selecting tracks, for setting track and note length, and for working with presets.

- Usually press and hold **TRACK** to access its features. (for example to adjust quantize or Portamento)

2.5.2 Track parameters



note length	note style	quantize	Portamento
Note length controls the duration of notes that are of default note length. All other notes remain unaffected Hold **TRACK** and turn the green dial to set note length from 1/64 notes to a whole bar Turning all the way to the right enables drone mode	Note style is set using **TRACK** together with the blue dial. ✓ settings for drum tracks: ✓ Retrig ✓ gate ✓ loop Settings for synth tracks: ✓ poly ✓ mono ✓ legato	Quantize live recorded notes by holding **TRACK** and turning the yellow dial. (Quantization amount per track, from 0 – 100 %)	Portamento adds glide between notes. Hold **TRACK** and turn the red dial to adjust Portamento. ○ 0 is no Portamento ○ 100 is very slow

2.5.3 Step count

With step count you can decide the number of steps that a track will use.

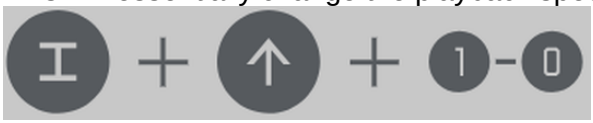


For example, if you choose step number four, the track will loop over the first four steps. Each of the 16 tracks can have a different step count.

2.5.4 Step length

You can set a step length multiplier to extend the duration of each step.

This will essentially change the playback speed of the track.



- Hold **TRACK** and **SHIFT** and press the value key that corresponds to the desired length of the track.

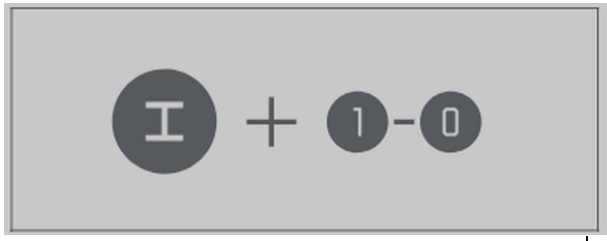
  For example: having a step count of 16 and a step length of 4 will extend the current track to play across four bars.

2.5.5 Offset notes



- To offset notes press and hold **TRACK** together with – or +
  This will move all notes on the active track one step left or right.

2.5.6 Select Plug / Preset





If a slot is lit it contains a plug, such as a sample kit, synth engine or effect.

To select a plug hold **TRACK** and press the **black value keys**

To select a preset for the active plug, hold **TRACK** and press any of the lit **white piano keys**

2.5.7 Randomize Preset



- To randomize a new preset hold **TRACK** and press **REC**.

This is a great way to come up with new sounds.

2.5.8 Store Preset



- Press and hold **TRACK** together with any of the **white piano keys** for two seconds, to store the current parameters as a preset on the held key position.
  A maximum of 14 presets can be stored per plug.

2.5.9 Kill track notes



- While the sequencer is playing you can hold **TRACK** and press **STOP** to kill all active notes on the current track.

Playback will continue but notes with long release or drone notes will be silenced.

2.5.10 Link / unlink tracks



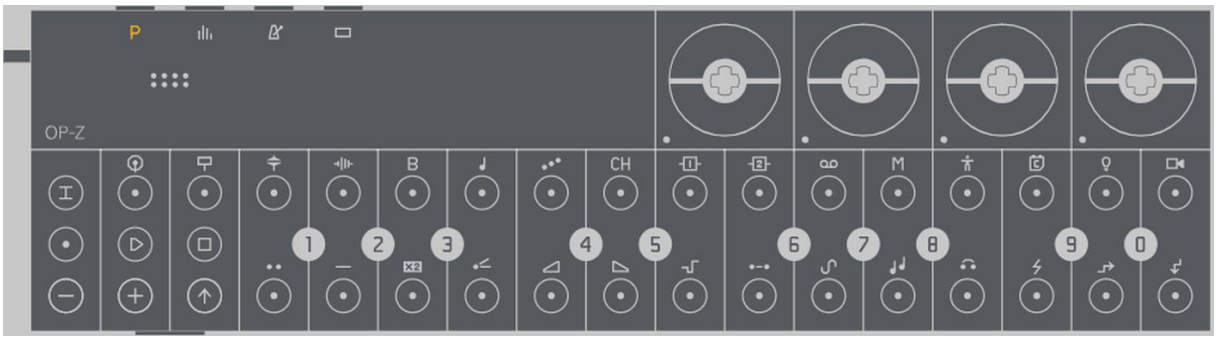
- Press and hold **TRACK** together with the current active "track"**1-16**, then press additional "track"**1-16** buttons to link these tracks together with the first.
  The originally selected track will be solid white, and the linked tracks will be blinking.

Playing and triggering the original track will now also trigger linked tracks.

- To unlink the tracks select the original track again.

Pro-tip: try linking audio tracks together with the motion track for tightly integrated audio / graphics.

2.6 Step components



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2.6.2 USING STEP COMPONENTS 21
2.6.3 CLEAR STEP COMPONENTS 22
2.6.4 STEP COMPONENT REFERENCE CHART 22
2.6.5 6.4 STEP COMPONENTS + APP 22

2.6.1 *"Step components" introduction*

Using "step components" in your programming opens up new possibilities for creative sequencing.
"Step components" can be applied to any of the audio tracks, tracks 1 – 8. Each step can have multiple "step components", adding unique playback behavior per step.

2.6.2 *Using "step components"*



Press and hold **SHIFT** and select the "steps"**1-16** you wish to apply "step components" to.
The LEDs of these steps will change to green indicating marked steps

Keep holding **SHIFT** and select the component you wish to add by pressing the corresponding white piano key.
Then select the desired component setting with the "value keys" **1–0**.

Release **SHIFT** and your "step component" is added.
Alternatively, if you continue holding **SHIFT** you can add a further component.
You can also adjust the setting of a component by momentarily holding its corresponding white piano key.

Quickly pressing an applied component will remove it.

Pro-tip: try combining the last three "step components" (spark components) with the note-based "step components". It's possible to get some very interesting results.

2.6.3 Clear “step components”

- Press and hold **SHIFT** and **STOP** to clear all the “step components” on current track.



2.6.4 “Step component” reference chart

	component	1	2	3	4	5	6	7	8	9	0
●●	pulse	count: 1	count: 2	count: 3	count: 4	count: 5	count: 6	count: 7	count: 8	count: 9	random
—	pulse hold	count: 1	count: 2	count: 3	count: 4	count: 5	count: 6	count: 7	count: 8	count: 9	random
X2	multiply	X1	X2	X3	X4	X5	X6	X7	X8	broken chord	quantize
	velocity	-4	-3	-2	-1	default	1	2	3	mute	random
	ramp up	2 steps 1 octave	3 steps 1 octave	4 steps 1 octave	5 steps 1 octave	6 steps 1 octave	2 steps 3 octaves	3 steps 3 octaves	4 steps 3 octaves	5 steps 3 octaves	6 steps 3 octaves
	ramp down	2 steps 1 octave	3 steps 1 octave	4 steps 1 octave	5 steps 1 octave	6 steps 1 octave	2 steps 3 octaves	3 steps 3 octaves	4 steps 3 octaves	5 steps 3 octaves	6 steps 3 octaves
	random	2 steps 1 octave	3 steps 1 octave	4 steps 1 octave	5 steps 1 octave	6 steps 1 octave	2 steps 3 octaves	3 steps 3 octaves	4 steps 3 octaves	5 steps 3 octaves	6 steps 3 octaves
●–●	portamento	glide 1	glide 2	glide 3	glide 4	glide 5	glide 6	glide 7	glide 8	direct	random
	sweep	filter up	filter down	synth up	synth down	pan	filter up long	filter down long	synth up long	synth down long	pan
	tonality	ignore chord progression	transpose only	offset octave	offset fifth	offset third	chromatic up	chromatic down	quantize 1	quantize 2	quantize 3
	jump	jump to start	jump to 2/4	jump to 3/4	jump to 4/4	jump forward	jump back	jump to random	stay	align to global track	gate step
	parameter spark	1	1 2	1 2 3	1 2 3 4	1 2 3 4 5	1 2 3 4 5 6	1 2 3 4 5 6 7	1 2 3 4 5 6 7 8	random	reset counter
	component spark	1	1 2	1 2 3	1 2 3 4	1 2 3 4 5	1 2 3 4 5 6	1 2 3 4 5 6 7	1 2 3 4 5 6 7 8	random	reset counter
	trigger spark	1	1 2	1 2 3	1 2 3 4	1 2 3 4	1 2 3 4 5 6	1 2 3 4 5 6 7	1 2 3 4 5 6 7 8	random	reset

2.6.5 “Step components” + app

While using OP-Z paired with the app, and using the main OP-Z interface, you will get a visual guide briefly explaining the “step components”.

2.7 Project

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2.7.13 PROJECT + APP 25

2.7.1 Project introduction

Project is the first of the four index buttons, on the top side of OP-Z. This is where you select the project and pattern that you wish to work on.
Each of the 10 projects holds 16 pattern.
Switch patterns instantly or create patterns chains to make longer compositions. You can also perform operations such as copying patterns and settings and more.

2.7.2 Select project



- Press and hold **PROJECT** and press the “value keys” **1-0** to select a project.

Pro-tip: while playing, press **PLAY** before selecting a new project to delay the switch until the end of the current bar

2.7.3 Select pattern



- Press and hold **PROJECT** and press the pattern keys 1-16 to select a pattern.
  If the sequencer is playing, the patterns switches instantly, maintaining the current step position for all tracks.

2.7.4 Chain patterns



Press and hold **PROJECT** and press **PLAY** to enter chain mode. Keep holding **PROJECT** and select up to 32 patterns to create a pattern chain or song sequence



Active pattern chains can be saved by holding **PROJECT** together with a white piano key

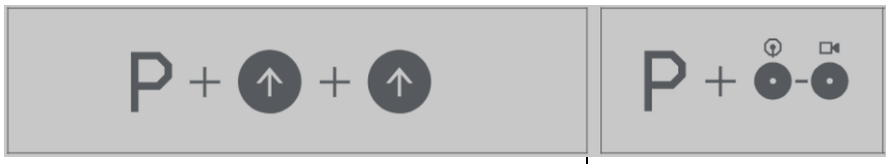
2.7.5 Copy pattern



Press and hold **PROJECT** and press **SHIFT** once to copy the currently active pattern	Keep holding **PROJECT** and press the destination pattern 1–16 to paste it

Pro-tip: keep holding **PROJECT** and select multiple patterns to quickly copy the pattern to multiple slots

2.7.6 Copy settings



Press and hold **PROJECT** and press **SHIFT** twice to copy the currently active pattern settings	Keep holding **PROJECT** and press the destination pattern 1–16 to paste the settings

2.7.7 Copy track



Press and hold **PROJECT** and press **SHIFT** three times to copy the currently active track	Keep holding **PROJECT** and press the destination "track" **1–16** to paste it

2.7.8 Copy project



- Press and hold **PROJECT** and any value key 1-0 to save the active project to the slot corresponding to the pressed key.

2.7.9 Clear pattern



Press and hold **PROJECT** and **STOP** and wait for the bar to fill up to clear the Pattern. When full the pattern is cleared release before full to cancel the operation	Press and hold **PROJECT** and **STOP** and **SHIFT** to clear the entire project

2.7.10 Bounce pattern



- Press and hold **PROJECT** and **REC** to render a 10 second audio file of the current pattern.
  The audio file will be saved to disk along with a copy of the project.

You can store up to 5 bounces. Trying to store more than 5 bounces will result in a red led flash. Use content mode to access your bounces.

Pro-tip: if you have an active pattern chain this will be bounced to disk. (Still limited to 10 sec)

2.7.11 Snapshot



Hold **PROJECT** and **+** to store a snapshot of the current project. any previous snapshot will be overwritten	Hold **PROJECT** and **–** to recall the stored project snapshot. Any changes made since storing the snapshot will be overwritten

2.7.12 Saving



Auto save By default, any changes to a project is automatically saved and there is no need to save manually	manual save mode You can toggle manual save mode and disable auto save by holding **PROJECT** and **TRACK** for a few seconds	manual save mode (alt.) You can also hold **PROJECT** while turning on the power on OP-Z to start in manual save mode. This can handy when lending your OP-Z to your friends and not risk losing any of your patterns	manual save To manually save a project press and hold **PROJECT** and hold the desired project slot using the “value keys” **1-0**

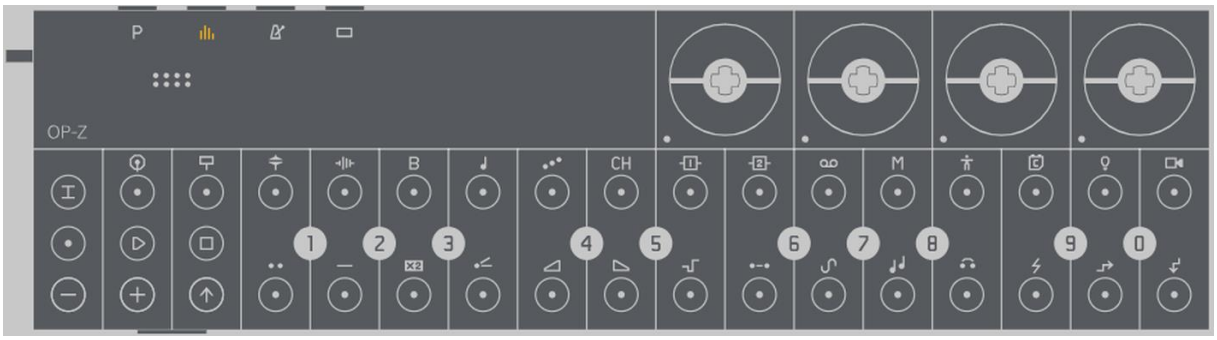
2.7.13 Project + app

When paired with the OP-Z app, holding **PROJECT** will display the project page.

The project page gives an overview of the current project, pattern and pattern chain.

There are also some handy shortcut hints for button combinations, as well as visual progress feedback when performing operations.

2.8 Mixer



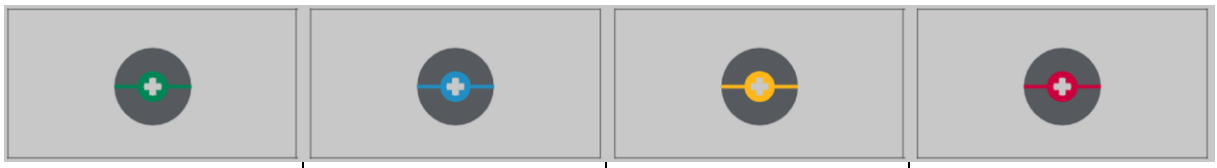
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2.8.1 Mixer introduction

The **MIXER** button is the second index button on the top side of the device, and is represented by the mixer symbol ıllı. Using mixer you can mute and unmute tracks, select different mute groups, control the gain for the drum group and synth group respectively, as well as control the master compressor and overall project gain.

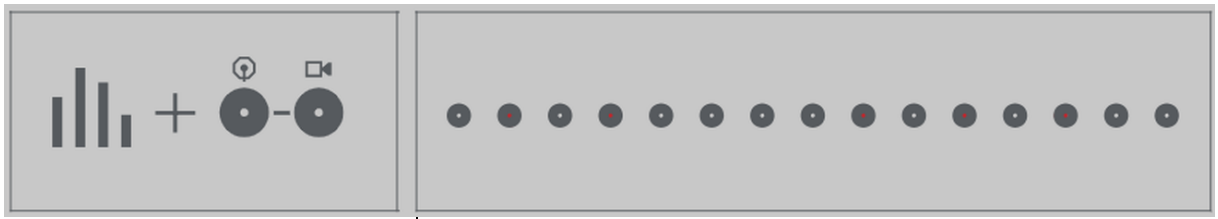
- Press and hold this button to access the project-wide mixer functions.

2.8.2 Mixer parameters



drum group	synth group	punch	master
Adjust gain for tracks 1–4 as a single group	Adjust gain for tracks 5–8 as a single group	Adjust the master compressor	Adjust the master gain level

2.8.3 Mute track



While holding **MIXER**, the “track” **1-16** keys act as toggles for muting and unmuting the corresponding tracks	Tracks that are lit are active, playing audio and sending midi information by default. “tracks” **1-16** that are unlit are muted

2.8.4 Mute groups



Mute groups allow you to store different mute configurations. Each project holds 10 mute groups. Use the “value keys” **1–0** to select which mute group to be active. The active mute group is stored per pattern.

2.8.5 Mute audio



By default, muting a track will stop any notes from being triggered. However, it is possible to mute only the audio signal sent to the master bus. The track will still output midi and audio signal to the effect and tape tracks.

- To do this, while holding the **MIXER** button, press the **SHIFT** key.
  The **SHIFT** key will light red.
- Now when muting tracks they will turn red when muted.
  This will mute only the track audio but not the outgoing MIDI.

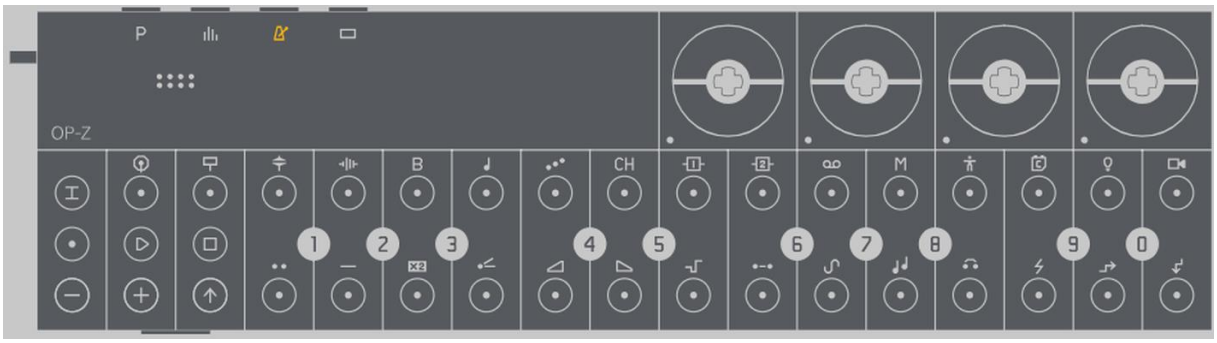
Pro-tip: you can mix and match the two mute types, and store these settings across multiple mute groups.

2.8.6 Mixer + app

When paired with the OP-Z app, holding **MIXER** will display the mixer page.
The mixer page gives an overview of your track levels. On this page it is possible to adjust the faders with your fingers much like a traditional mixing desk.

The buttons below the faders allow you to mute / unmute tracks. When muted the fader will be greyed out.

2.9 Tempo



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2.9.1 Tempo introduction

The third index button on the top side of OP-Z is the **TEMPO** button. This is represented by a metronome symbol and is used for adjusting project-wide tempo in bpm, swing setting and the metronome sound and level.

- By pressing and holding **TEMPO** you access the different tempo functions.

2.9.2 Tempo parameters



Bpm	Swing	metronome sound	metronome level

2.9.3 Set tempo



Tempo in OP-Z is set in beats per minutes (bpm). Values between 40 – 200 bpm can be used. use one of the following ways to set bpm on OP-Z	turn dial Press and hold **TEMPO** and turn the green dial. current bpm is indicated by 0 - 9 LEDs	enter value Press and hold **TEMPO** and enter the desired bpm with the **value keys** example: holding **TEMPO** and pressing 1 + 2 + 0 will set bpm to 120	tap tempo Press and hold **TEMPO** and repeatedly tap any of the **white piano keys**

2.9.4 Tempo nudge



2.9.5 Lock tempo



- While the sequencer is running, press and hold **TEMPO** and momentarily press **– / +** to nudge tempo down or up.
  This can be handy when jamming together with others in a non-synced setting.
- To lock the current tempo, hold the **TEMPO** button and press **SHIFT**. Tempo won't change until unlocked by pressing **SHIFT** again.

2.9.6 Adjust swing

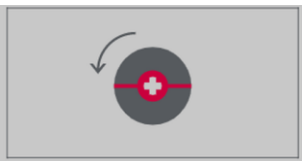


Swing is a way to slightly alter the timing of notes played in a sequence.

- To add swing hold **TEMPO** and turn the blue dial. No swing is a 50% setting.
  Turn the dial as you wish and listen for that perfect groove.

Note: swing is only applied to step-programmed and quantized live recorded notes.

2.9.7 Using the metronome

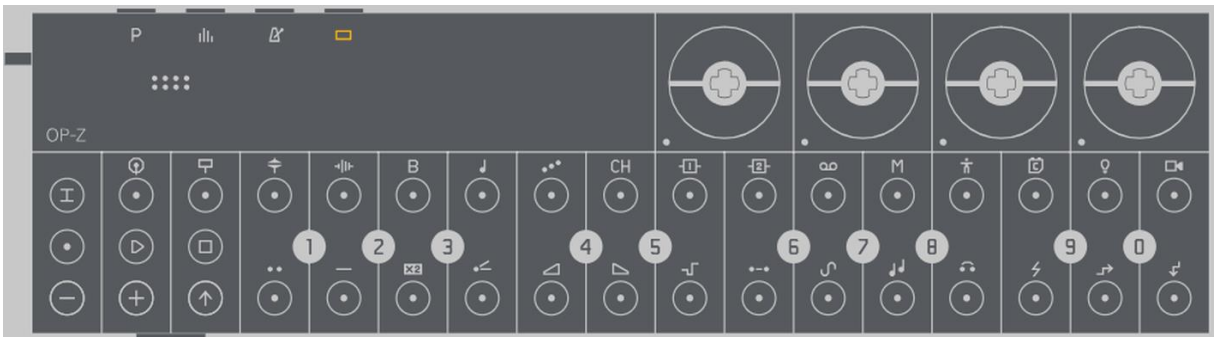
		
To use the metronome when playing or recording make sure the sequencer is running and hold **TEMPO**. Turn up the metronome level by using the red dial	Select a sound for the metronome, ranging from click, Swedish, English, German, Japanese to Italian, using the yellow dial	Turn the red dial counterclockwise all the way to turn the metronome off again

2.9.8 External sync

Sending midi clock to OP-Z will automatically activate the external sync mode. This is indicated by the “track LEDs” **1-16** blinking green, in groups of four.

By default, incoming midi clock is disabled, this can be configured in the midi settings.

2.10 Screen

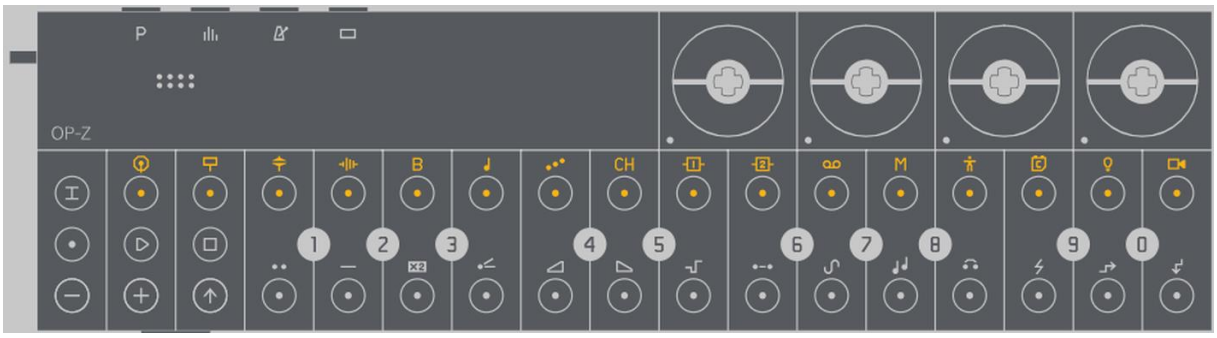


Screen introduction

The fourth index button on the top side of OP-Z is called screen. The **SCREEN** button is used to display the current battery charge, or used in conjunction with the app to navigate around or to display the current battery status.

- When using the OP-Z standalone, you can press and hold **SCREEN** to show the current battery level of the OP-Z internal battery.
- When using the OP-Z connected to the app, holding **SCREEN** and at the same time turning the “color dials”**1-4** will allow you to navigate through app pages.
- **SCREEN** is also used to activate the camera on photometric.

2.11 Tracks



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2.11.1 Introduction to tracks

OP-Z is a 16-track sequencer. It features 8 audio tracks and 8 control tracks. The audio tracks are divided into 2 groups, the drum group (track 1 – 4) and the synth group (track 5 – 8).
The eight control tracks can be sequenced just like any other track, and allow deep control over all parameters.
In parallel, all 16 tracks can also send and receive midi, each on its own channel.

2.11.2 Tracks overview

	drum group	synth group	control tracks	
	kick	B bass	fx1	perform
	snare	lead	fx2	module
	perc	arp	tape	lights
	sample	CH chord	M master	motion

2.11.3 Audio tracks 1-4 (drum group)



kick | snare | perc | sample

There are four drum tracks in the drum group. These are kick, snare, perc and sample. Each track in this group has a two note polyphony per step.

They are all sample based and consist of 24 different sounds across the musical keyboard. This is called a kit and is compatible with the OP-1 drum kit file format.

Four kits together is called a sample pack. Load different packs using the app or by connecting to a computer and using content mode.

2.11.4 Audio tracks 5-8 (synth group)

There are four audio tracks in the synth group. These are bass, lead, Arp and chord.

All tracks in the synth group can utilize any of the available synth engines, or load OP-1 format sample sounds.

Each synth track behaves slightly differently.

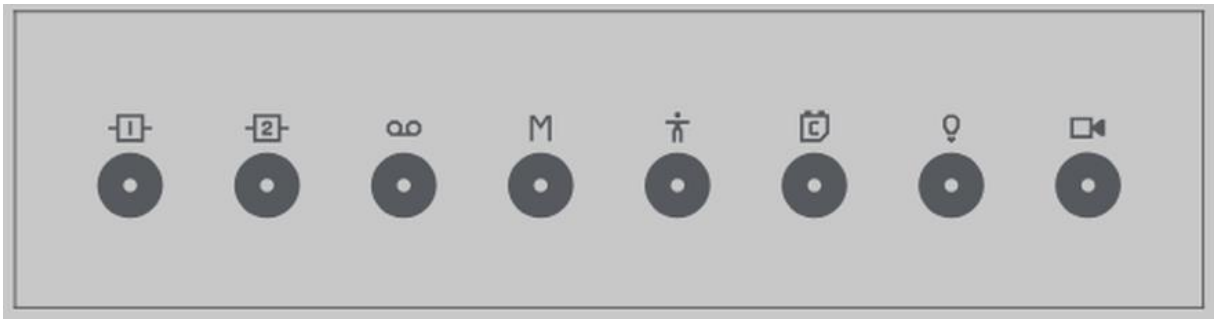
For bass, lead and chord the parameter pages are the same: synth, envelope, LFO and send. ARP has dedicated Arp control, instead of the LFO.

For detailed information please refer to the bass, lead, Arp and chord tracks respectively.



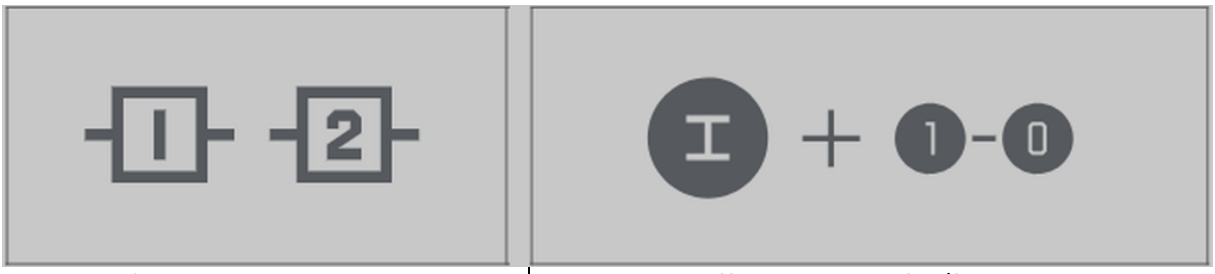
Bass	lead	Arp	chord
Bass is an audio track dedicated to powerful bass lines. It is monophonic which means one note per step. this track is the main source for the master track transpose analysis	Lead is a track dedicated to synth leads. Any note style can be used. the polyphony for this track is three, meaning maximum three notes per step	The arp is an arpeggiator with dedicated arp control, replacing the LFO page. it is monophonic and any notes placed on the same step will be arpeggiated	The chord track is great for adding harmony to your music, with its four note polyphony per step, for beautiful chords

2.11.5 Control tracks 9-16



There are a total of 8 control tracks on the OP-Z. These are **FX1**, **FX2**, **TAPE**, **MASTER**, **PERFORM**, **MODULE**, **LIGHTS** and **MOTION**.

2.11.6 FX



The two fx tracks are where you select your send effects. You can assign a different effect to any one of the two fx tracks Check the reference page to see all available fx engines and parameters	To select an effect: while on fx1/fx2 hold **TRACK** and press one of the **black keys**. Turn the "color dials"**1-4** to control fx parameters p1, p2, Filter and filter resonance.

pro-tip: holding **SHIFT** while on an fx track enables you to play the previously selected drum / synth track so that you can hear what that track sounds like with different fx settings.

2.11.7 Tape



The tape track is an audio buffer that is constantly recording when in playback. It can be used for tape tricks and beat repeat style looping effects.
Read more about it here § 2.13 au-dessous.

2.11.8 Master



The "master track" allows you to transpose selected tracks and add harmonic chord progressions.
Like other control tracks the master track can be sequenced allowing you to record interesting key changes and harmonic chord progressions.

Read more about it here § 2.14 au-dessous.

2.11.9 Performance



The performance track allows you to apply punch-in effects on all tracks at once.

- Hold **TRACK** and press **PERFORM** to select the performance track.
- Hold the **piano keys** to add punch-in effects.

You can record, copy and delete punch-in effects in the same way you would work with notes on a drum/synth track.

Read more about "punch-in effects" here § 2.16 au-dessous.

2.11.10 Module



The module track is used to control any OP-Z expansion modules. More information will be available as more modules are released.
Modules are sold separately.

When no module is inserted the module track can act as a midi track with 16 independent midi cc values.

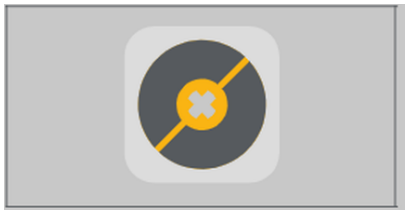
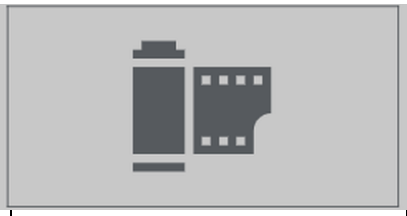
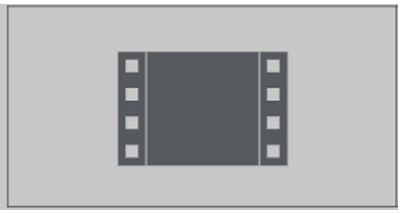
2.11.11 Lights



The OP-Z is capable of handling DMX which is the universal protocol for controlling lighting rigs.
It is possible to sequence up to 16 fixtures or lights. You can use the OP-Z sequencer to control these fixtures.

Learn all about it here § 2.15 au-dessous.

2.11.12 Motion

		
In addition to audio, midi and lights sequencing, OP-Z is also a powerful visual sequencer When using the OP-Z app you can sequence photos via photomatic, or visual graphics via motion, just as easy as sequencing on any other track.	Photomatic is basically a camera app, connected to your OP-Z Learn all about it here § 2.21.6 au-dessous	Motion allows you to program and control live 2d or 3d graphics made in the unity real-time graphics engine. Here's how

Use your iOS device or computer and sequence locally, or go big and program your entire live show using OP-Z.

2.12 Arp



Introduction

The arp or arpeggio track functions slightly differently to other tracks. Holding notes and chords will play an arpeggio pattern. The Arp track has no LFO but instead has its own unique parameters.

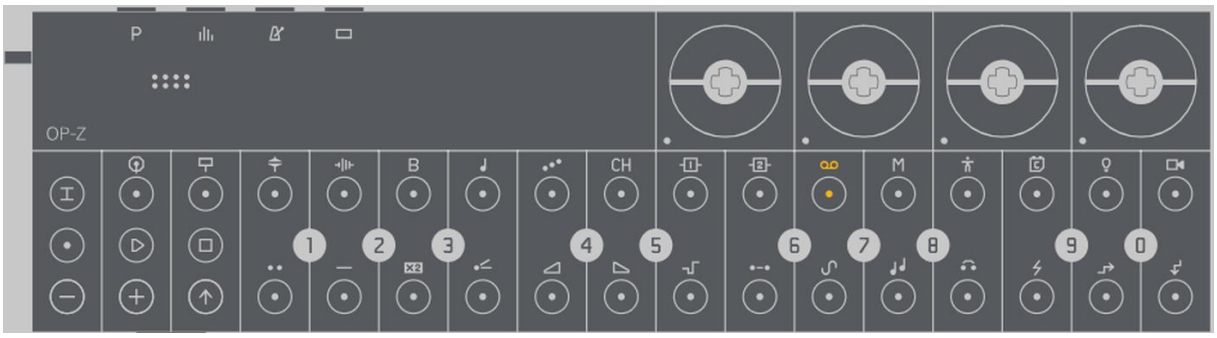
Arp parameters



speed	pattern	style	range
Turn the green dial to set the arpeggio speed, in eight different settings	The blue dial sets the arpeggio pattern type: ✓ manual ✓ up ✓ down ✓ up/down ✓ down/up ✓ random	Use the yellow dial to set arpeggio style. This allows you to choose different rhythmic patterns for the arpeggio. There are six different rhythms	Set the range of the arpeggio with the red dial. high values will add higher octaves to the pattern

Pro-tip: put the arpeggio track into mono mode then increase the Portamento for a sliding Arp.

2.13 Tape



Tape introduction

The tape track is an audio buffer that is constantly recording when in playback. It can be used for tape tricks and beat repeat style looping effects.

Tape parameters



speed coarse	speed fine	filter	resonance
Set the speed of the buffer playback. Left plays back at regular speed. scrolling right increases the speed and then once again decreases to a full stop	The center position (led green) will play the buffer at normal speed. Rotating left will play at half speed and rotating right will play at double speed	Control the filter of the tape effect	Control the resonance on the tape filter

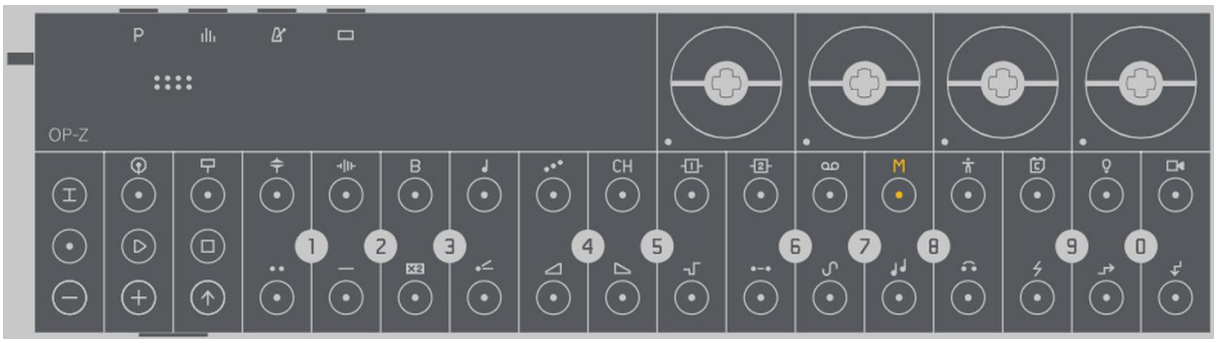
Pro-tip: sending midi cc simultaneously to parameters 1 and 2 can result in some cool scratching effects.

Tape controls



The **white keys** are used to choose from which part of the buffer playback begins	The **black keys** choose the length of the tape loop with 1 being the shortest and 0 being the longest

2.14 Master



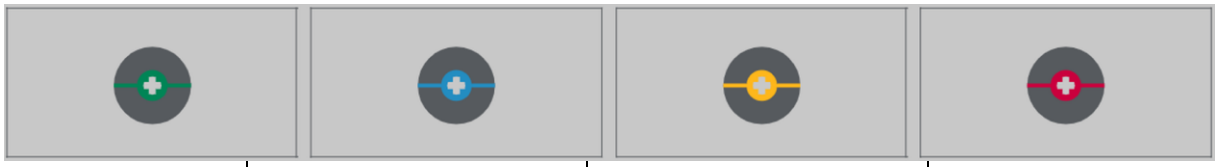
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2.14.1 Master introduction

The “master track” allows you to transpose selected tracks and create harmonic chord progressions. The OP-Z automatically analyses the notes used in the bass, lead, Arp and chord tracks to determine the key of the pattern.

- Using the **piano keys** it is then possible to change key / mode.
- Use the “color dials”**1-4** to control the master effects and filter.

2.14.2 Master parameters



chorus	drive	filter	resonance
Turn the green dial to adjust the master chorus effect. this will also add a subtle stereo effect	The blue dial controls the master drive, adding a subtle overdrive to your mix	The “yellow and red **dials**” control the master filter. it's a combination high-pass / low-pass filter, with an unaffected neutral setting in the middle	

2.14.3 Transpose tracks



OP-Z automatically analyses the notes used in the bass, lead, arp and chord tracks and detects the mode and key of the active pattern. The bass track is the main source for this analysis. Using the **piano keys** it is then possible to transpose the pattern and change its key and mode	To choose which tracks to be included press and hold **SHIFT** and press the different "track" **1-16** buttons. To include a track make sure its track led is lit	Use the "transpose" **-/+** buttons to change octave used (represented by the **value keys**)

Pro-tip: transposing drums can be a great way to do drum fills.

2.14.4 Chord progressions



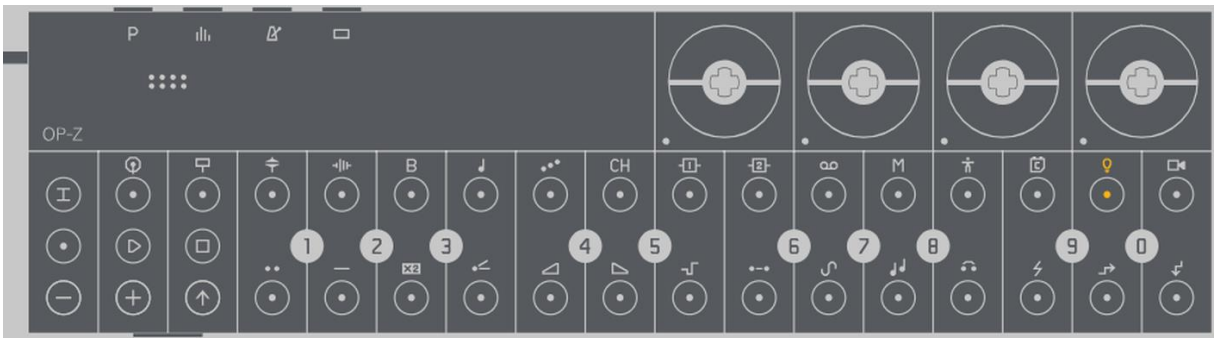
By programming different chords onto the master track you can create chord progressions.

Program the master track just like any of the audio tracks.

- Hold **TRACK** + **SHIFT** and choose playback speed using the **value keys**.
  A setting of 4 gives you a four bar loop.

Pro-tip: extend the master track duration by lowering the playback speed to allow for longer sequences.

2.15 Lights

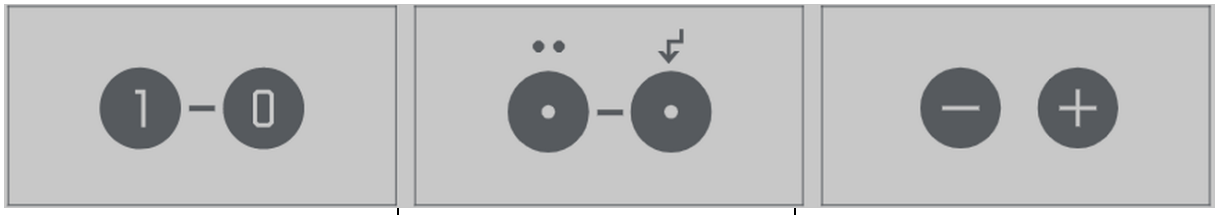


2.15.1 Lights introduction

The OP-Z has a separate track dedicated entirely to controlling your light rig.

You can program this track just like any other track on the OP-Z.

2.15.2 Lights operation



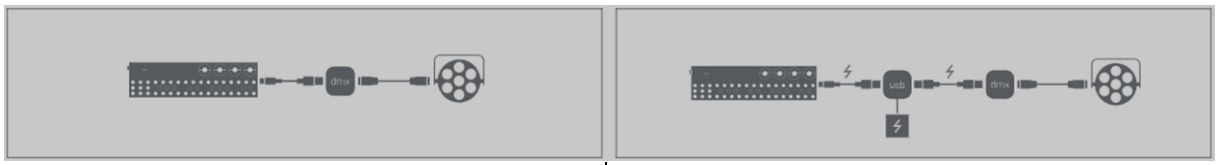
set pattern	effects	preview mode
Use the **value keys** to select one of the 10 patterns	Play the **white keys** to trigger effects and animations	Toggle between fixture preview and step view

2.15.3 Light parameters



main color	alternate color	pattern speed	intensity
The main color applied to all connected rgb fixtures	Used by certain effects to instantly switch color	The scroll speed of the currently selected pattern	The default intensity of the currently lit fixtures

2.15.4 Setup



To control DMX you need a USB DMX interface connected to the OP-Z. It can be connected directly to the USB port	Connecting the DMX interface directly to you OP-Z is convenient but might deplete you battery faster than you want. in that case, use a powered hub

Refer to the USB chapter to learn which hubs and DMX interfaces that are compatible with OP-Z (sold separately).

2.15.5 Configure DMX



“dmx.json”

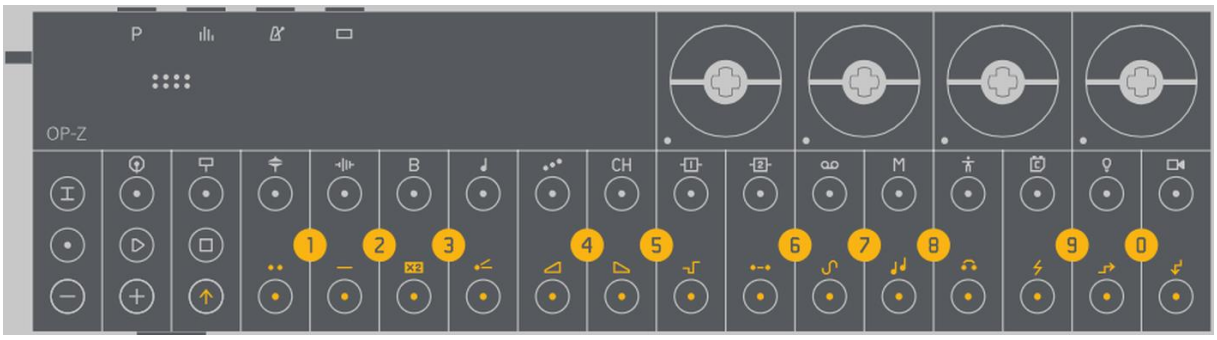
OP-Z can transform sequencer data to DMX channel data and send it out using a USB DMX interface. Use the “dmx.json” file found in content mode to configure the outgoing channel data to correspond to your DMX fixture setup.

The maximum total number of channels that can be configured is 128.

The supported channel types are:

channel	range	description
red	0 – 255	red color
green	0 – 255	green color
blue	0 – 255	Blue color
white	0 – 255	white color
color	0 – 255	color Wheel
intensity	0 – 255	intensity / dimmer
fog	0, 255	triggered by animation 14
dial 1	0 – 255	green dial (page 1)
dial 2	0 – 255	blue dial (page 1)
dial 3	0 – 255	yellow dial (page 1)
dial 4	0 – 255	red dial (page 1)
dial 5	0 – 255	green dial (page 2)
dial 6	0 – 255	blue dial (page 2)
dial 7	0 – 255	yellow dial (page 2)
dial 8	0 – 255	red dial (page 2)
0 – 255	0 – 255	custom fixed value
on	255	always on
off	0	always off

2.16 “Punch-in” effects

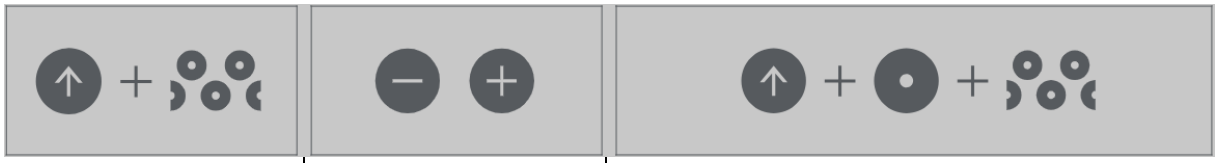


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2.16.1 “Punch-in” effects introduction

Using punch-in effects is a fun way to add powerful on the fly effects to your OP-Z patterns. The approach is inspired by the pocket operators.
Select a track, hold **SHIFT** and start jamming on the musical keyboard. The punch-in effects can be applied to any of the audio tracks, tracks 1 – 8, and can be recorded to the performance track.

2.16.2 Using “punch-in” effects



Press and hold **SHIFT** and hold any of the **piano keys** to add punch-in effects	The low octave affects the current track, and the high octave affects the current track group: the drum group or the synth group	Record the punch-in effects by holding **REC** or using record lock This will be recorded on the performance track, and can be fully edited

2.16.3 “Punch-in” effect reference chart

Table of punch-in effects, their **white keys** and **black key** settings

key	effect	key	effect	key	effect
F	duck	A	Loop 2	C#	short
F#	Filter sweep	Bb	pitch	D	ramp down / Fill 2
G	Loop 1	B	follow / echo	C#	long
G#	Stereo	C	ramp up / Fill 1	E	Random

2.16.4 “Punch-in” effects & iOS app

While using OP-Z paired with the app, and using the main OP-Z interface, you will get visual feedback when using the punch-in effects.
These graphics can be a striking way to add some visual action to your live performance.

2.17 Microphone

OP-Z has a built-in microphone. This can be found on the left side of the unit, next to the volume knob and the mic led indicator.

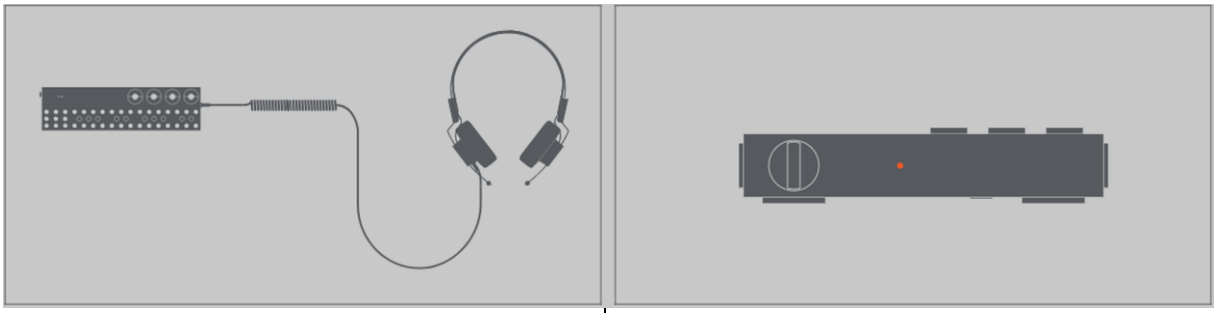
- To activate the microphone hold and tilt the unit, so that this left side is facing upwards. The mic led will be green.

Microphone mode



Press to increase microphone volume	Press to decrease microphone volume	Press to toggle between fx1, fx2, both fx1 & fx2, and no effect	Press and hold to enable the microphone. The mic led will be red

Headset mode



Having a headset connected to OP-Z and pressing the headset answer button will toggle headset mode. This will disable the built-in microphone and activate the headset mic. the mic led on OP-Z will be orange	The volume and fx control buttons will function the same as in microphone mode, however the headset mic will be constantly enabled

2.18 USB

USB introduction

OP-Z can be controlled using the USB midi port. Connect OP-Z to a computer or other USB host using the included C to A cable. If using a C to C cable, please make sure to use a high quality cable.
OP-Z has USB host functionality that allows you to connect USB devices directly into the USB -c port.
OP-Z supports most USB midi devices that adhere to the USB plug-and-play standard.

The OP-Z can provide a maximum of 100 mA which is not enough for some midi devices. For these cases, use a powered hub. Please refer to the whitelist to see which hubs are supported. Some devices present themselves as more than one midi device, which currently is not supported by the OP-Z. Please refer to our device whitelist if you want to be on the safe side. This list will be extended over time.

Supported devices

This list is does not include all supported devices but rather the ones that we recommend and guarantee to work.
The list will be extended over time.

midi device	direct	needs external power	comments
OP-1	yes	no	
oplab	yes	yes	
Korg microkey air	yes	no	

powered hub	direct	needs external power	comments
Kingston nucleum	yes	yes	

usb adapter	direct	needs external power	comments
Apple c to a	yes	no	
aukey c to a	yes	no	

DMX interface	direct	needs external power	comments
enttec dmxusb pro	yes	no	
enttec dmxusb pro mk2	yes	yes	

2.19 MIDI

MIDI introduction

Each of the OP-Z's 16 tracks can both send and receive midi. The outgoing cc values of each parameter on each track can be assigned a custom control number. The outgoing channel of each track can also be customized.

External clock

Sending a midi timing clock to your OP-Z will automatically put it into external sync mode. This is indicated by four green LEDs showing the current tempo when **TEMPO** button is held.

MIDI config shortcuts

MIDI settings for the OP-Z can be configured via the module track.

- First go to the module track by holding **SHIFT** and pressing **MODULE**.
- The midi settings are turned on/off by holding **SHIFT** and then pressing the corresponding **keys** while in the module track.

key combination	setting	description
shift + 1	channel one to active	any incoming midi on channel 1 is redirected to the currently active track
shift + 2	incoming midi	enable incoming midi
shift + 3	outgoing midi	enable outgoing midi
shift + 4	midi clock in	enable incoming midi clock
shift + 5	midi clock out	enable outgoing midi clock
shift + 6	enable program change	enable program change in/out
shift + 7	alt program change	On: use bank 1–16 / program 1–16 to set active pattern. off: pattern 1–16 is activated with bank 1 /Program 1–128 and bank 2 / program 1–32
shift + 8	midi echo	echo incoming midi back on same port
shift + track 1 - 16	mute track	Mute the outgoing midi on the corresponding track

MIDI config content mode

Use the “midi.json” file found in content mode to customize the OP-Z midi configuration.
The available settings are as follows:

setting	range	description
channel_one_to_active	true / false	any incoming midi on channel 1 is redirected to the currently active track
incoming_midi	true / false	enable incoming midi
outgoing_midi	true / false	enable outgoing midi
timing_clock_in	true / false	enable incoming midi clock
timing_clock_out	true / false	enable outgoing midi clock
enable_program_change	true / false	enable program change in/out
alt_program_change	true / false	True: use bank 1–16 / program 1–16 to set active pattern false: pattern 1–160 is activated with bank 1 / program 1–128 and bank 2 / program 1–32
midi_echo	true / false	echo incoming midi back on same port
track_enable	true / false	Enable midi per track
track channels	1 – 16	set outgoing channel per track
parameter_cc_out	0 – 255	set outgoing cc value per parameter per track

MIDI config via app

The OP-Z midi configuration can be set using the OP-Z app. using the app it is also possible to assign the midi cc values and midi send channels for each track.

parameters absolute

name	cc	track/ channel	range
parameter 1	1	1-16	0-127
parameter 2	2	1-16	0-127
filter cutoff	3	1-16	0-127
filter resonance	4	1-16	0-127
envelope attack	5	1-16	0-127
envelope decay	6	1-16	0-127
envelope sustain	7	1-16	0-127
envelope release	8	1-16	0-127
lfo depth	9	1-16	0-127
lfo speed	10	1-16	0-127
lfo target	11	1-16	0-127
lfo shape	12	1-16	0-127
fx 1 send	13	1-16	0-127
fx 2 send	14	1-16	0-127
pan	15	1-16	0-127
volume	16	1-16	0-127
portamento	17	1-16	0-127
note style	18	1-16	0-127

relative

cc	track/ channel	range
32	1-16	1, 127
33	1-16	1, 127
34	1-16	1, 127
35	1-16	1, 127
36	1-16	1, 127
37	1-16	1, 127
38	1-16	1, 127
39	1-16	1, 127
40	1-16	1, 127
41	1-16	1, 127
42	1-16	1, 127
43	1-16	1, 127
44	1-16	1, 127
45	1-16	1, 127
46	1-16	1, 127
47	1-16	1, 127
48	1-16	1, 127
49	1-16	1, 127

system

name	cc	track/ channel	range
track gain	50	1-16	0-127
track gain (relative)	51	1-16	1, 127
reset track gains	52	any	any
mute	53	1-16	0-1
audio mute	54	1-16	0-1
mute group	55	any	0-9
tempo	56	any	0-127
swing	57	any	0-127

track

name	cc	track/ channel	range
track step count	60	1-16	1-16
track step length	61	1-16	1-16
quantize	62	1-16	0-127
note length	63	1-16	0-127

other / real time

name	cc	track/ channel	range
start			
stop			
continue			
program change		1-10	0-15
program change		1, 2	0-127
clock			
pitch bend		1-16	
song pointer		not used	
sense		not used	

ui

name	cc	track/ channe	range
active track	102	0	0-15
parameter page	102	1	0-3

2.20 Disk modes

2.20.1 INTRODUCTION 46
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2.20.5 RESTORE CONTENT 47
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2.20.1 Introduction

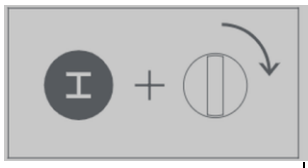
There are a couple of ways to connect the OP-Z to a computer. To update the firmware of the unit or to perform a factory reset, you can use upgrade mode.
To add, remove or modify the OP-Z content, use content mode. Both modes connect the OP-Z to a computer using USB. Remember to always safely eject the OP-Z disk before disconnecting from the computer or unplugging USB.

2.20.2 Content mode

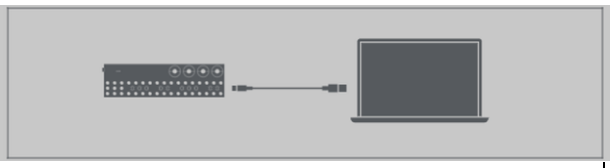
Content mode allows you to backup and restore content on OP-Z, as well as adding custom content, such as adding your own sounds. This is also where you manage your projects and access your bounces

Finally you can use content mode to configure MIDI and DMX.

Enter content mode like this:



Press and hold the **TRACK** button while turning on the unit
OP-Z will start in content mode, and all "track LEDs"**1-16** will be green



Connect your OP-Z to your computer via the USB cable provided.

Once connected it will show up in the computer as an external removable USB disk



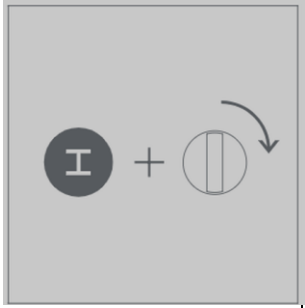
Open the OP-Z disk on your computer to access the files

Note: remember to eject the disk before disconnecting

2.20.3 Import sounds

You can add your own sounds and sample packs to OP-Z. The supported file format is the OP-1 ".aif" sample format. For drum tracks it is the drum sample format and for synth tracks it is the synth sample format.

You can either export samples from OP-1, build your own packs using the OP-1 drum utility, or download packs from the web. To import sounds and sample packs into OP-Z do the following:



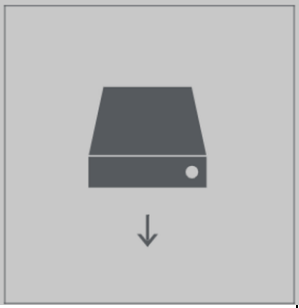
Make sure OP-Z is in content mode by holding **TRACK** when power cycling the unit. Connect it to a computer. Open the OP-Z disk and open the 'samplepacks' folder.

The 10 slots of a track are represented by ten sub folders for each track



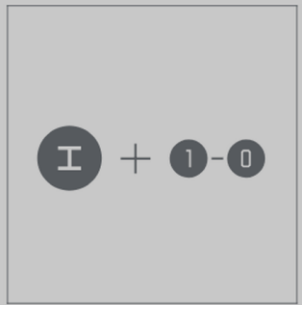
Drag and drop your sound files to the different track folders 1–8 and slots 1–10.

Choose a free slot folder and place your new sample pack there. only one sample pack per slot folder will be imported, any additional ones will be rejected



Safely eject the USB disk.

OP-Z will update and restart when ready. do not power off your device during this process

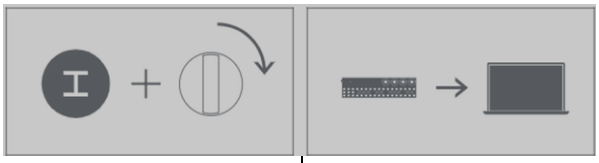


To access the new sounds in OP-Z select the corresponding track and slot.

You can store a total of 32 MB of sample data.

Remove any sample files you do not use anymore to make room for new ones

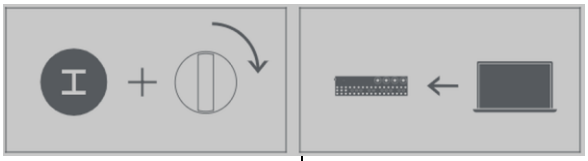
2.20.4 Backup content



Make sure OP-Z is in content mode and connected to a computer

Open the OP-Z disk and drag and drop the desired files from OP-Z to your computer

2.20.5 Restore content



Make sure OP-Z is in content mode and connected to a computer

Open the OP-Z disk and drag and drop the desired files from your computer to the corresponding locations on the OP-Z disk

type	add	modify	remove
projects	yes	yes	yes
Sample packs	yes	yes	yes
bounces	yes	no	yes
config	no	yes	no

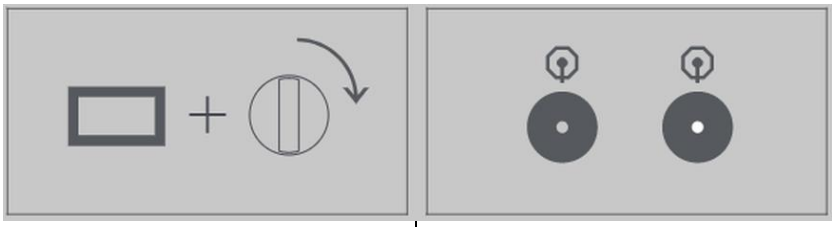
This chart shows which operations are available per type of content.

Any changes you do to the files on the OP-Z disk are reflected on the unit after you eject the disk. Wait for the unit to synchronize the content and restart in normal mode.

If any content was rejected, it will end up in a folder named 'rejected' on the OP-Z disk the next time content mode is entered.

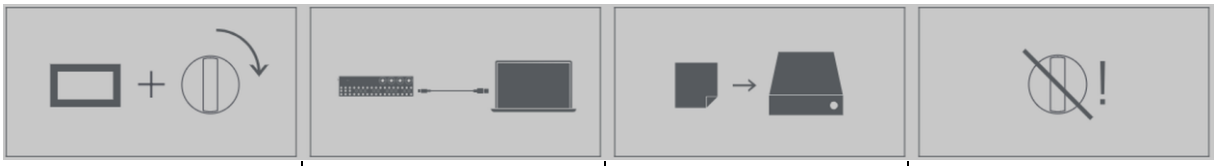
Note: please see the how_to_import.txt and how_to_dmx.txt files, both found on the content disk, for further reference.

2.20.6 Upgrade mode



Upgrade mode is used for updating the OP-Z firmware and for initiating a factory reset Press and hold the **SCREEN** button while turning on the unit	OP-Z will start in upgrade mode, the **kick led** will be blinking white and the parameter dial LEDs will all be white

2.20.7 Software update



To update the OP-Z firmware, make sure OP-Z is in upgrade mode	Connect the unit to a computer using USB	OP-Z will show up in the computer as an external removable USB disk	Drag and drop the firmware file onto this disk and make sure it's copied in full

Note: the latest firmware file can be downloaded here.
Safely eject the USB disk. OP-Z will update and restart in normal mode when ready.

Note: do not power off your device during this update process.

2.20.8 Factory reset



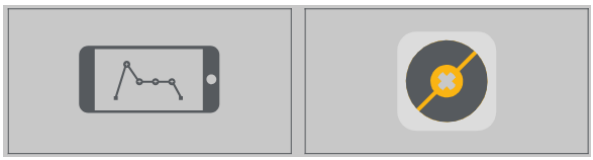
Upgrade mode can also be used to initiate a factory reset, restoring OP-Z to its original factory settings.	Make sure OP-Z is in upgrade mode. press and hold **SCREEN** and stop for a second	This triggers a factory reset	The process is finished when you see a blinking white led and four green LEDs. Safely eject the unit and then power cycle it. OP-Z is now ready

Note: any custom user content will be removed when a factory reset is performed.

2.21 App

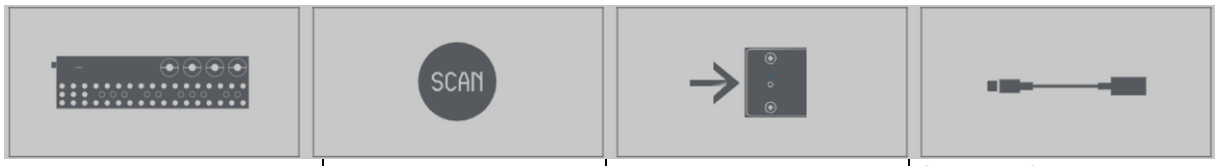
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2.21.3 NAVIGATING THE APP 49
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2.21.1 App introduction



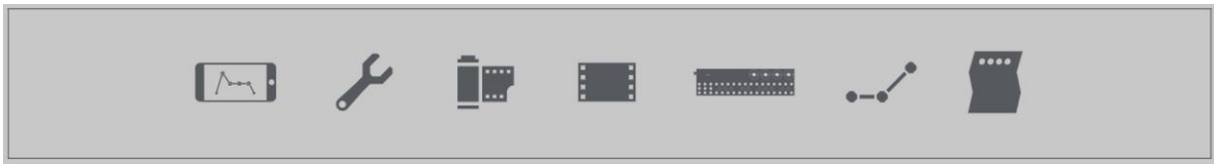
Use the OP-Z app together with your OP-Z to get detailed info about your compositions, enable multi touch features and experience live 3d visuals. Download the OP-Z app from app store. Currently available for iOS.

2.21.2 Pairing with OP-Z



Go to the devices screen in the app. if you have navigated somewhere else use the main menu to get there	Tap the scan button to show a list of compatible devices available to your system	Push the pair button on the backside of your OP-Z. Tap to connect when it appears in the device list	If you prefer you can use a USB-c to lightning adapter to get a wired connection

2.21.3 Navigating the app



Apart from acting as a screen for the OP-Z, the app provides a number of unique features of its own. Everything can be accessed through the main menu.



Press and hold the **SCREEN** key on the OP-Z to access the main menu



Use any color dial on the OP-Z to scroll the main menu



Use the “step”**1-16** keys to speed dial.
Release SCREEN key to confirm your selection

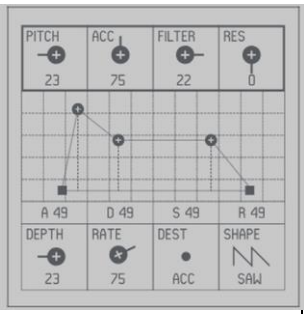


You can also access the main menu by tapping the “screen” icon in the status bar of the app. swipe to navigate the menu. tap to confirm your selection

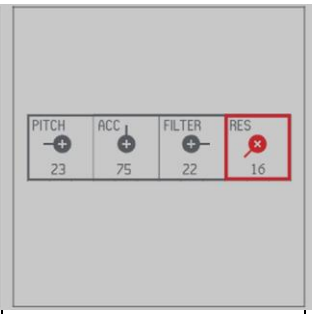
2.21.4 Screen



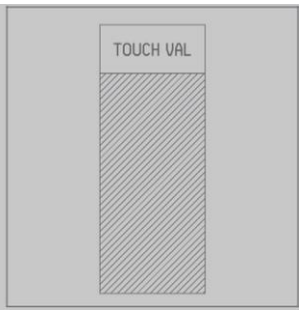
This is the OP-Z external screen and main user interface.
View and tweak the multitude of parameters on your OP-Z



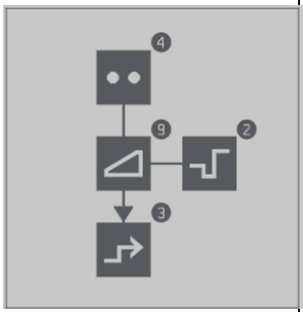
On most tracks you get an overview of all the control parameters.
The parameter indicators are grouped into pages just like on the OP-Z itself



Tap any of the indicators to select the parameter for touch tweaking. Notice how the dial led colors change to match the selected page color.



Drag your finger over the touch pad area to make fine adjustments to the selected parameter.



While editing “step components” on the OP-Z a wiring diagram will display temporarily on screen.



The performance track will show visual punch-in effects.
Punch-in effects are also overlain on the audio track screens when the **SHIFT** key is held on OP-Z

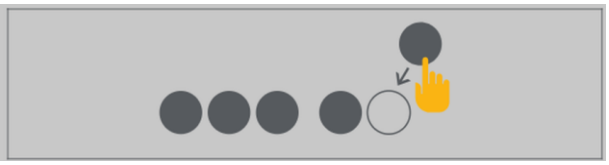
2.21.5 Configurator



This is where you configure what plug goes in what slot on your OP-Z



Swipe to scroll through the list of available plugs for the active track



The round slots at the bottom of the screen correspond to the 10 **value keys** on the OP-Z.
Grab the current plug from round area in the center of the screen.
Drag & drop to the slot where you want it

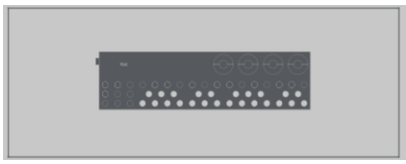


When you are happy with you slot configuration hit commit to transfer to the OP-Z



Hit revert if you want to reload the configuration from your OP-Z

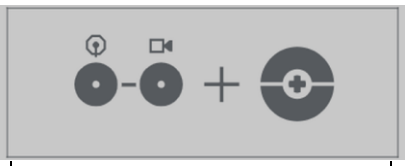
2.21.6 Photomatic



Photomatic lets you snap and arrange photos with the camera on your iOS device.
You can sequence the images and apply effects using the OP-Z

A photomatic camera roll consists of 24 image slots.

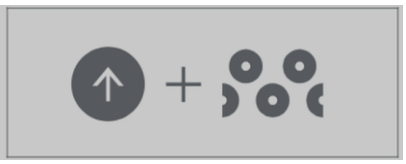
Play the 24 **piano keys** on track 16 to display the corresponding images. You can sequence these changes just like you sequences musical notes.



Use the “color dials”1-4 on track 16 to apply photomatic adjustments to your images:

- ✓ hue
- ✓ saturation
- ✓ brightness
- ✓ Contrast

Be careful, extreme settings on brightness and contrast can make your images appear too light or dark.

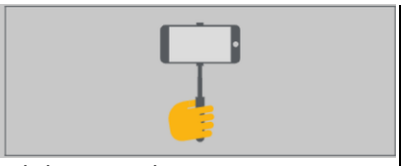


You can apply punch-in effects to photomatic too.
The **black keys** switch between the 10 photomatic camera rolls.
the **white keys** apply various effects:

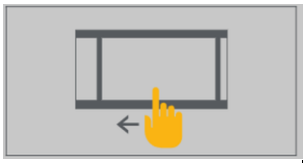
- ✓ previous image
- ✓ next image
- ✓ random image
- ✓ first image
- ✓ invert color
- ✓ flip horizontal
- ✓ flip vertical
- ✓ punch zoom
- ✓ white out
- ✓ black out
- ✓ sharpen
- ✓ kill red
- ✓ kill green
- ✓ kill blue



Press and hold the **SCREEN** index key to activate the photomatic remote shutter. Press any of the 24 **piano keys** to snap photos with the camera on your iOS device. Photos will be saved to the corresponding slot in the photomatic camera roll



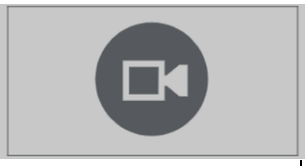
While using the OP-Z remote shutter feature use a camera stand or friendly bystander to hold your iOS device



You can also use the touch screen to work with photomatic. Swipe to scroll through the images. This will bring up a helpful touch button interface



Instead of snapping new photos you can load existing images from the photo library on your iOS device

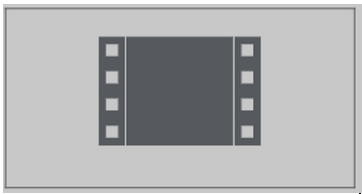


Tap the camera button to toggle the camera on your iOS device on/off. The flip button cycles available cameras. the snap button takes a photo and saves it to the current image slot

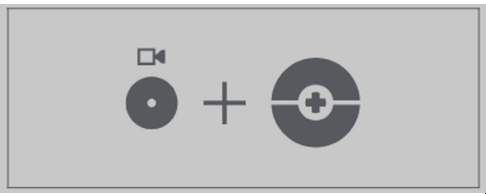


Access the photomatic roll selection by tapping the current roll text in the status bar

2.21.7 Motion



Display and control live 2d or 3d visuals.
Load one of the included videopaks, or load one you or your friend made using the free unity toolkit videolab



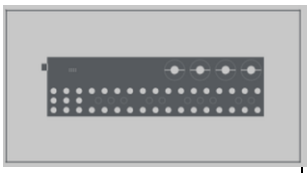
Use the musical keyboard on track 16 to control the visuals.
Black keys make cuts between cameras.
White keys apply various effects while held. You can sequence these changes just like you sequences musical notes



The "color dials"1-4 on track 16 can also be used to tweak various properties of the visuals.

Access the selection of installed videopaks by tapping the current videopak text in the status bar

2.21.8 Devices

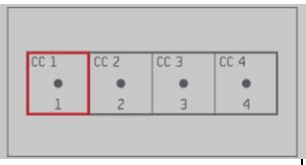


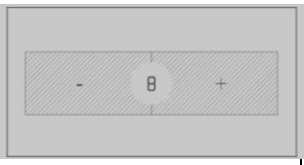


if you have multiple OP-Z devices available you can browse them and select which one to connect to the app	If your app is too old to work with the firmware of an available OP-Z you will get an option to upgrade the app. If the firmware is too old, visit the download page for instructions on how to upgrade your OP-Z

2.21.9 MIDI setup



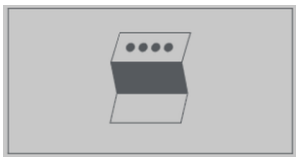






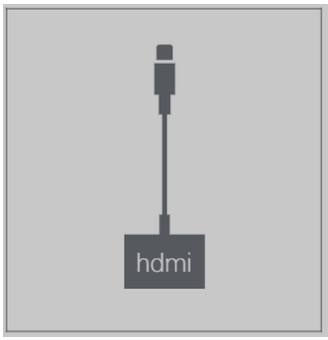
Here you can tweak the midi connectivity settings of your OP-Z	Select a parameter indicator and use the touch pad to edit the midi control change number it sends out	Tap the + and – buttons to edit the midi channel used by this track	Toggle the global midi settings by tapping these boxes. Refer to the midi reference section for detailed descriptions of these settings

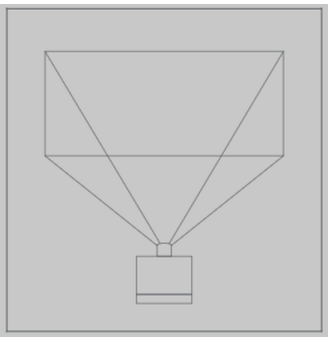
2.21.10 Guide



This very guide conveniently available inside the app.
An internet connection is needed to access the guide.

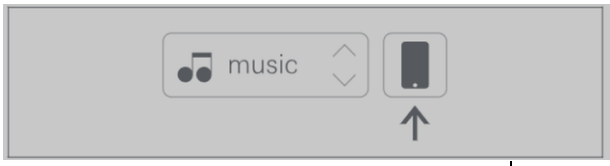
2.21.11 Video out

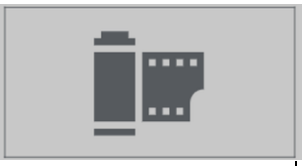


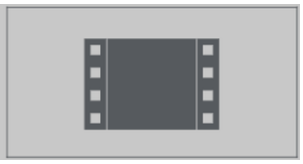


The OP-Z app supports external displays over the iOS lightning to hdmi adapter. Simply connect the adapter to your iOS device and run an hdmi cable from the adapter to an external display or projector	Photomatic and motion will automatically render to the external display. The app user interface stays on the iOS device screen

2.21.12 File transfer





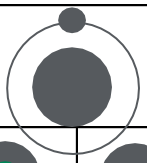


Connect your iOS device computer and launch iTunes. Click the minuscule device button next to the music dropdown in iTunes In iTunes click file sharing in the iOS device panel to the left. Select OP-Z in the list of available apps. Under OP-Z documents to the right you will see a few folders	The photomatic folder contains all your photomatic camera rolls. Drag and drop the photomatic folder from iTunes to your desktop. In the folder there are 10 subfolders, one for each photomatic camera roll. Each roll folder contains up to 24 images and a simple configuration file called roll.json. If you edit the image content of a roll folder, trash the configuration file - the app will rebuild it once you relaunch. When you are done drag and drop the photomatic folder back to iTunes to replace the old folder	The motion folder is used to install custom videopaks. Videopaks are designed in videolab, our unity toolkit. Learn more about videolab on GitHub. To install a custom videopak simply drag and drop it into the videopaks folder in iTunes

2.22 Reference

Synth engines

bow		cluster		digital		electric	
string synthesis		clustered oscillators		digital raw engine		complex and transfo	
							
							
tension	chorus	tone	gravity	octave	feedback	cross mod	x mod

saw		shade		sample		uranus	
filtered waves		smooth piano		pcm sample player		clean bass	
							
							
envelope	tone	detune	drive	pitch		tone	feedback

volt
multi oscillator electric s

 
oscillator variation / oscillator modulation

FX engines

crush		delay		dist		rymd	
type: vector		type: basic digital		type: overdrive		type: digital reverb	
							
							
amount	cutoff	amount	cutoff	amount	cutoff	amount	cutoff

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