OP-1

PORTABLE SYNTHESIZER
SYNTHÉTISEUR PORTABLE
TASCHEN-SYNTHESIZER
小型シンセサイザー

VERSION 1.2

小型シンセサイザー

2:50:20
4
1
IN
2
OUT
3
4
5
6
1
2
3
4
JOIN

OP-1

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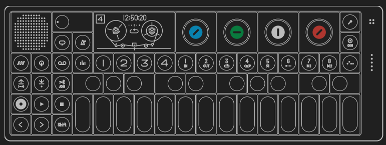
SYNTHÉTISEUR PORTABLE
TASCHEN-SYNTHESIZER
小型シンセサイザー



Warnings
Warranty & FCC

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-1 first. Never connect the 3.5mm plugs going from the OP-1's mic input or line output to a mic input on a sound card with phantom power active. This could destroy the ports on the OP-1. 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-1 placed so it is level and sure to remain stable. Never install or use the unit in any of the following locations:

- Humid environments or baths and washrooms.
- Safety-critical applications.
- Nuclear facilities and weapons systems.
- Aerospace applications or environments for automotive installations.

Store small parts out of the reach of children and infants. If accidentally swallowed, contact a doctor immediately.

Warranty and return policy

The OP-1 is fully factory tested and comes with a 12 month (from purchase date) warranty. This does not include malfunction due to misuse of the device, such as being dropped, crushed or used in an application of inappropriate voltages to the device's connectors or improperly designed or executed modifications. In particular, you are the sole responsible for damage caused by a charging method other than 5V USB power. The general warranty policy does not cover ESD (static discharge) damaged products due to improper handling.

The warranty does not cover shipping charges.

Make sure to read the Terms & Conditions here:
http://teenageengineering.com/terms-and-conditions

FCC ID: Z23TE2A1

IC: 9915A-TE2A1
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

FCC NOTE:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

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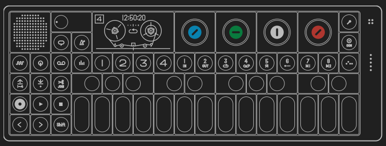

OP-1 Operator's Manual

運営マニュアル
Benutzerhandbuch
Mode d'Emploi

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Table of Contents

1 Hardware - Overview
1.1 Power On/Off
1.2 Charging the Battery
1.3 In- and Outputs
1.4 OP-1 Side View

2 Layout
2.1 Keys and Knobs
2.2 LEDs

3 Musical Keyboard
3.1 Playing a Sound
3.2 Octave Shift

4 Main Modes
4.1 The Four Main Modes
4.2 Using SHIFT + Any Main Mode
4.3 Main Mode Screen Examples

5 Synthesizer Mode
5.1 Synthesizer Mode - Introduction
5.2 Synthesizer Engines
5.3 Envelope
5.4 Play Mode
5.5 Synthesizer Effect
5.6 Synthesizer LFO
5.7 Change Sound
5.8 Saving a Sound
5.9 Sound File Structure

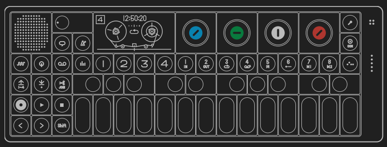
6 Drum Mode
6.1 Drum Mode - Introduction
6.2 DRUM Sampler Engine
6.3 Laying Out A Drum Kit
6.4 Dynamic Envelope
6.5 Importing Your Own Sounds
6.6 Using OP-1's Standard Layout
6.6 DBOX Drum Engine

7 Sequencers
7.1 Sequencers - Introduction
7.2 Selecting a Sequencer Type
7.3 ENDLESS Sequencer
7.4 ENDLESS Functionality
7.5 PATTERN Sequencer
7.6 PATTERN Functionality
7.7 TOMBOLA Sequencer
7.8 TOMBOLA Functionality
7.9 FINGER Sequencer
7.10 FINGER Functionality

8 Tape Mode
8.1 Tape Mode - Introduction
8.2 Record To Tape
8.3 Overdubbing
8.4 Rewind And Fast Forward
8.5 Jump To the Start of Tape
8.6 Jump To the End of Tape
8.7 Reverse Playback
8.8 Recording Level
8.9 Tape Editing
8.10 Advanced LIFT
8.11 Changing Tape Speed
8.12 Advanced Recording Techniques
8.13 Tape Tricks
8.14 Erasing Tape
8.15 Backing Up Your Tape
8.16 Bars

9 The Mixer
9.1 Mixer - Introduction
9.2 Sound Path
9.3 Mixer
9.4 EQ
9.5 Master Effect
9.6 Master Out

10 Tempo
10.1 Tempo - Introduction
10.2 Setting the Tempo/Tap Tempo
10.3 Using the Metronome
10.4 Free Mode
10.5 Beat Match
10.6 Sync Mode



11 Help
11.1 The Help Button
11.2 Tools
11.3 Battery Level

12 Recording External Sources
12.1 Using the Mic/Input Key
12.2 Mic/Input Key in Synth Mode
12.3 Mic/Input Key in Tape Mode
12.4 Sampling Using The Built in Microphone
12.5 Creating a Drum Kit From FM Radio Waves

13 Song Rendering and Connectivity
13.1 Album
13.2 COM
13.3 OP-1 Mode
13.4 CTRL (Controller) Mode
13.5 DISK Mode
13.6 OPT (Option) Mode
13.7 Sequencing External Equipment
13.8 Controlling Ableton Live
13.81 Mac OS X Install
13.82 Windows Install
13.83 Finalize
13.84 Ableton Live Key Assignments
13.9 Controlling Propellerhead Reason

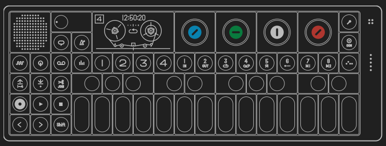
14 SHIFT Key
14.1 SHIFT Key
14.2 Change a Single Module
14.3 SHIFT + Main Mode Keys
14.4 SHIFT + Arrow Keys
14.5 SHIFT + Encoders

15 LFO Reference
15.1 Element LFO Mode
15.2 Random LFO Mode
15.3 Tremolo LFO Mode
15.4 Value LFO Mode
15.5 The MIDI LFO Mode
15.6 Crank LFO Mode
15.7 Bend LFO Mode
15.8 Additional Symbols Used in LFO Mode

16 Exercises
16.1 Recreating Sounds
16.2 Starting Out
16.3 Helicopter Sound
16.4 Singing Birds Sound

17 Reference
17.1 Synth Engines
17.2 Effects Reference

18 Hardware



Dear user,

Thank you for choosing the OP-1 musical instrument. This device is precision made to last many years and designed to be practical, intuitive and to give you hours of creative pleasure. To get the most out of your new OP-1, be sure to read this operator's manual carefully. For even deeper understanding and the latest pro tips, please visit the OP-1 community website http://ohpeewon.com

- Teenage Engineering

About this manual

This manual is written more or less with one chapter for every key you find on your OP-1 (except the musical keyboard which counts as one).
You create sounds (using the Synthesizer or Drum Mode keys) that you may also Sequence before you record to TAPE and finally MIX. You also have the option to record a final mix to ALBUM.

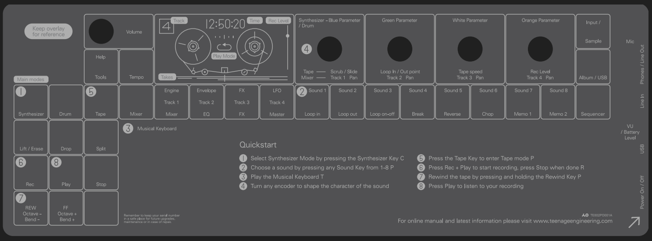
To make things easier, all keys, encoders and important modes relevant to the current page are marked on the OP-1 illustration in the page header.

Although the OP-1 is designed to be very intuitive, reading this manual will give you a deeper understanding of the concept behind many of OP-1's functions and modes. Anyway, don't be afraid of playing around and exploring. You can always come back to this manual at a later stage.

What's in the Box?

Check that the following items are included when you open the box: OP-1 Unit, USB Cable, Quick Guide Overlay and a Set of rubber bands.

Quick Guide Overlay


Keep overlay for reference
Main modes
Volume
Help
Tools
Tempo
4
Track
12:50:20
Time
Rec Level
Play Mode
Takes
Synthesizer – Blue Parameter / Drum
Green Parameter
White Parameter
Orange Parameter
Input /
Sample
Album / USB
Mic
Phones / Line Out
Line In
VU / Battery Level
USB
Power On / Off
Tape — Scrub / Slide
Mixer — Track 1 Pan
Loop In / Out point
Track 2 Pan
Tape speed
Track 3 Pan
Rec Level
Track 4 Pan
1 Synthesizer
Drum
5 Tape
Mixer
Engine Track 1 Mixer
Envelope Track 2 EQ
FX Track 3 FX
LFO Track 4 Master
2 Sound 1 Loop in
Sound 2 Loop out
Sound 3 Loop on-off
Sound 4 Break
Sound 5 Reverse
Sound 6 Chop
Sound 7 Memo 1
Sound 8 Memo 2
Sequencer
Lift / Erase
Drop
Split
6 Rec
8 Play
Stop
7 REW Octave – Bend –
FF Octave + Bend +
3 Musical Keyboard
TE002PO001A

Quickstart

① Select Synthesizer Mode by pressing the Synthesizer Key C
② Choose a sound by pressing any Sound Key from 1-8 P
③ Play the Musical Keyboard T
④ Turn any encoder to shape the character of the sound
⑤ Press the Tape Key to enter Tape mode P
⑥ Press Rec + Play to start recording, press Stop when done R
⑦ Rewind the tape by pressing and holding the Rewind Key P
⑧ Press Play to listen to your recording

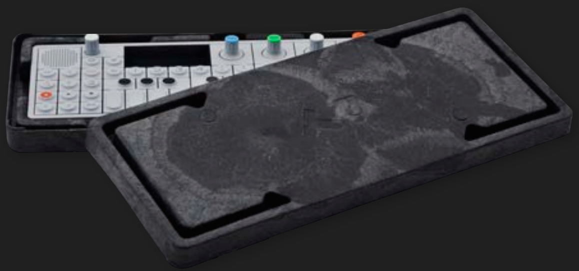
Remember to keep your serial number in a safe place for future upgrades, maintenance or in case of repair.

For online manual and latest information please visit www.teenageengineering.com

The OP-1 comes with a transparent overlay for quick reference of the keyboard layout. Keep this for future reference.

Rubber bands

You may use the PaperFoam box in which your OP-1 came delivered as a temporary storage box. Use the rubber bands to seal the box.



USB Cable

The OP-1 uses a standard USB to mini USB cable for charging the OP-1 and for transferring data between your OP-1 and your computer.

If you want to use an external power adapter instead of a computer for charging the battery, make sure you are using a 5V USB standard charger. A dedicated charger works more efficiently and will charge the battery faster.

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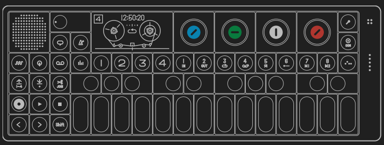


Quick Guide

Power on

Make sure that your OP-1 is fully charged. If not, insert the USB cable into the USB port located on the right side of your OP-1 and connect it to a computer or to a USB power adapter.

Turn on your OP-1 by sliding the white power switch located next to the USB port towards you. The Teenage Engineering symbol will be displayed briefly on screen. Turn up the volume using the white knob located on the left side of the screen (clockwise increases volume). You are now ready to play your new instrument.

Playing a synthesizer sound

Press the Synthesizer key. Select a synthesizer sound by pressing any key from 1-8. (These keys 1-8 are called Sound selection keys in this manual). Press any key on the Musical Keyboard.

1 IN
2 OUT
3
4
5
6
7 M1
8 M2

Playing a drum sound

Press the Drum key. Select a drum sound by pressing any Sound selection key from 1-8. Press any key on the Musical Keyboard.

Recording to tape

Press the TAPE key.
Select TRACK by pressing any of the 1-4 keys located under the screen. (These keys are called T1-T4 in this manual). Press REC + PLAY to start rolling tape.

Play the Musical Keyboard. Use the STOP key to stop recording. Rewind to the starting point by pressing and holding the REWIND key. Now press PLAY to listen to your recording.

Using the mixer

First make sure that you have some recorded material on the tape.

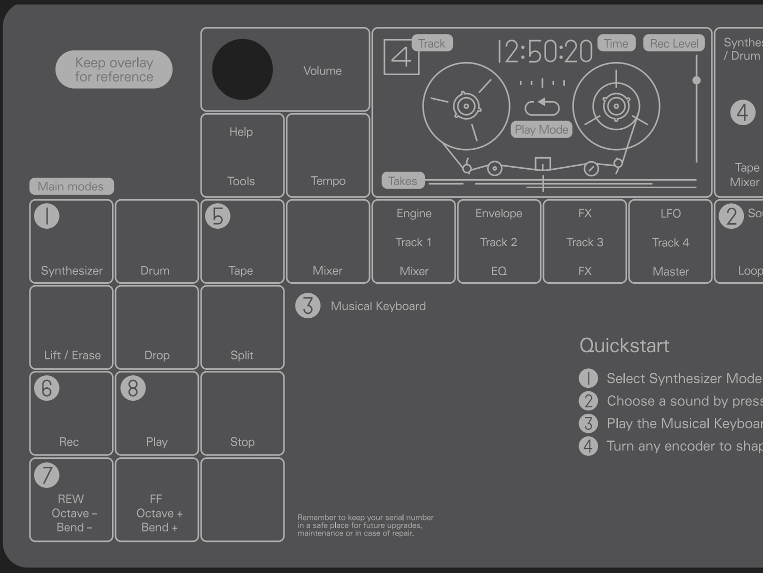
Press the MIXER key to open up the Mixer view. Now press the PLAY key to start playing the tape.

Depending on which track that contains recorded material, the corresponding VU meter will indicate the sound level.

Adjust the individual track level by turning the color related knob.

Hold down the SHIFT key while turning the color related knob to adjust the PAN for each track.

Congratulations! You have learned the basic fundamentals of your OP-1. To understand all of your OP-1's functions, please read this operator's manual carefully.

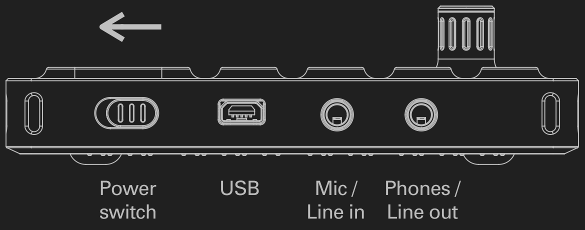

Keep overlay for reference
Volume
Help
Tools
Tempo
4 Track
12:50:20
Time
Rec Level
Play Mode
Takes
Synthes / Drum
4
Tape Mixer
Main modes
1 Synthesizer
Drum
5 Tape
Mixer
Engine
Track 1
Mixer
Envelope
Track 2
EQ
FX
Track 3
FX
LFO
Track 4
Master
2 So
Loop
3 Musical Keyboard
Lift / Erase
Drop
Split
6 Rec
8 Play
Stop
7 REW Octave – Bend –
FF Octave + Bend +
Quickstart
1 Select Synthesizer Mode
2 Choose a sound by press
3 Play the Musical Keyboar
4 Turn any encoder to shap
Remember to keep your serial number in a safe place for future upgrades, maintenance or in case of repair.

A good way to start is to follow the Quick guide printed on the plastic overlay that comes with your OP-1.

1 Hardware - Overview

1.1 Power On/Off

To power on your OP-1, slide the white power switch located on the right side of the device towards you. The display will light up and the OP-1 loads necessary system data.


Power
switch
USB
Mic /
Line in
Phones /
Line out

To power off, slide the power switch away from you. Data is always stored on-the-fly, so you don't have to worry about saving your sound or recordings.

Everything will still be there the next time you power on your OP-1 exactly the same as when you left it.

NOTE: The more samples or other data you store on your OP-1, the longer the start-up process will be. It's a good habit both for start-up time and for safety to back-up and clear your OP-1 occasionally.

1.2 Charging the Battery

The first thing you should do is to connect your OP-1 to a computer (or optional charger) via the USB port located on the right side of the unit. Make sure to keep your OP-1 connected until you have fully charged the internal battery. This will be indicated by the same LEDs used for the VU meter.

To check the battery level, press the Help key. The LEDs will light up to indicate the level. Five lit LEDs is equal to a fully charged battery.

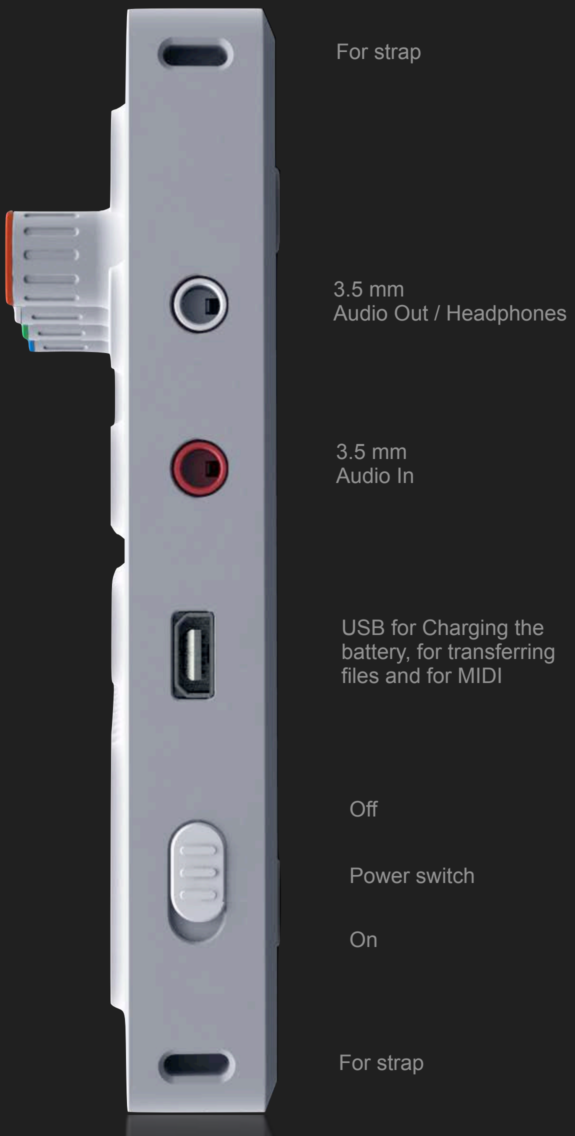
1.3 In and Outputs

OP-1 has three ports located on the right hand side of the unit.

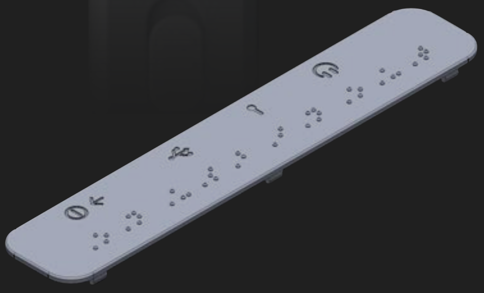
- Audio in/Line in
- Audio out for headphones/line out
- USB port for charging, transferring files and MIDI

NOTE: To adjust the input level press SHIFT + Mic key. To adjust the output level, turn the volume knob or set the master L/R level output located in mixer T4.

1.4 OP-1 Side view


For strap
3.5 mm
Audio Out / Headphones
3.5 mm
Audio In
USB for Charging the
battery, for transferring
files and for MIDI
Off
Power switch
On
For strap

If you turn your OP-1 upside down, you will find symbols and braille text that indicates I/O location.



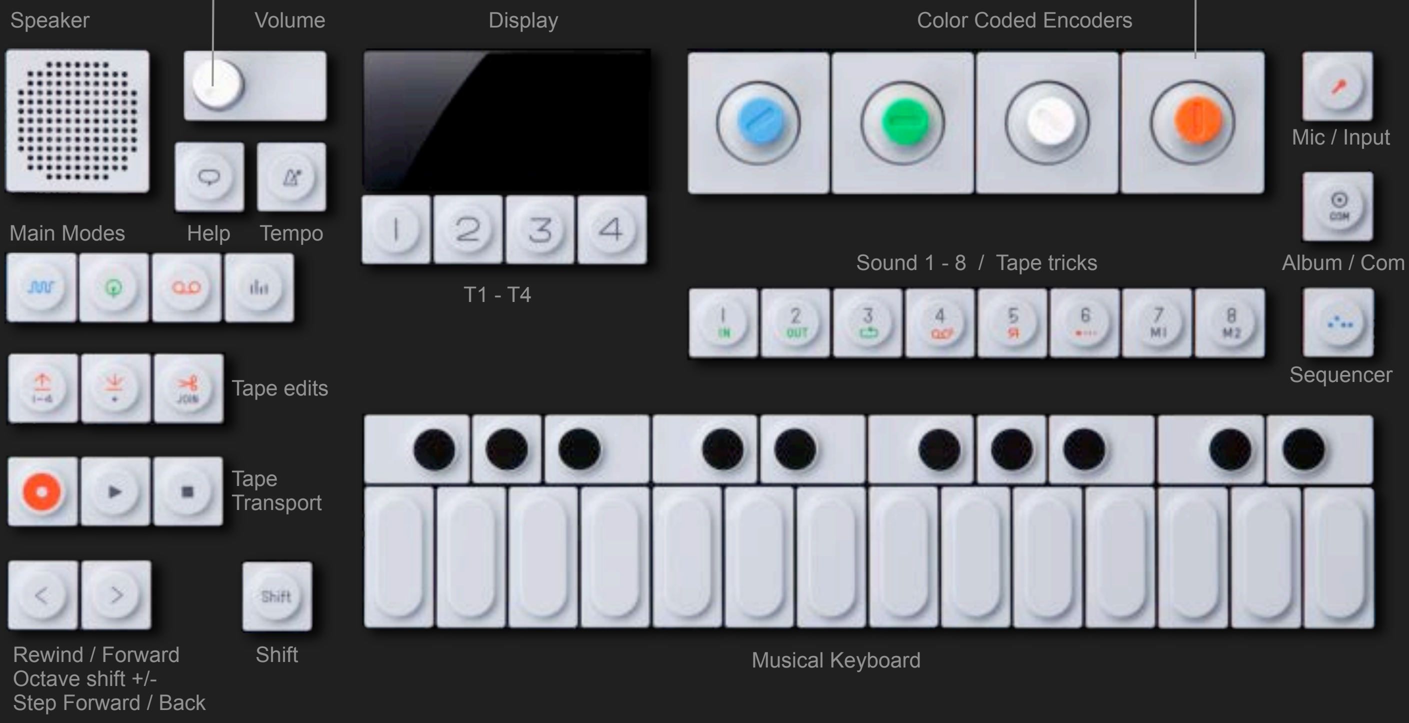
2 Layout

2.1 Keys & knobs

The layout of the OP-1 is divided into different groups for easy reading and intuitive workflow.

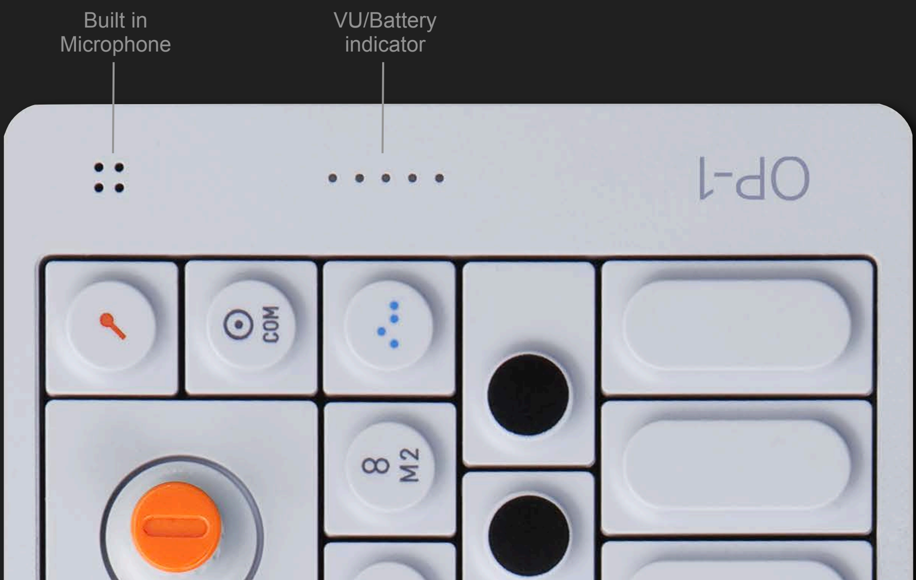
Turn the Volume knob to set the master volume.

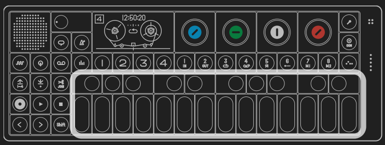
The four color encoders are related to the graphical interface on the display. A green graphical element or text hints that the green encoder will change its value or position.


Speaker
Volume
Display
Color Coded Encoders
Mic / Input
Help
Tempo
Main Modes
1
2
3
4
T1 - T4
Album / Com
Sound 1 - 8 / Tape tricks
1 IN
2 OUT
3
4
5
6
7 M1
8 M2
Sequencer
Tape edits
Tape Transport
Shift
Rewind / Forward
Octave shift +/-
Step Forward / Back
Musical Keyboard

2.2 LEDs

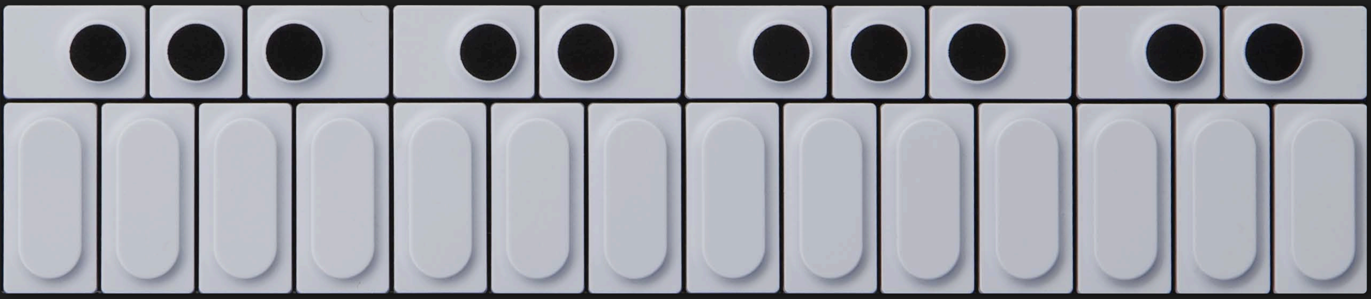
On the right side of your OP-1 you find the built in Microphone and VU/Battery LEDs


Built in Microphone
VU/Battery indicator
OP-1
COM
8
M2



3 Musical Keyboard

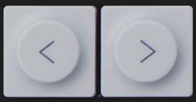
3.1 Playing a Sound



Press any key on the musical keyboard and you should instantly hear a sound. If it is silent, turn up the master volume located next to the speaker, or press the Synthesizer or Drum key.

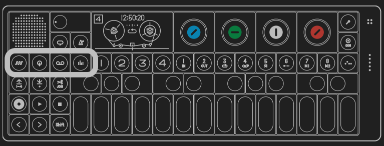
PRO-TIP: Press and hold HELP while playing the musical keyboard to let your OP-1 display the current note.

3.2 Octave shift



Use the Arrow keys to transpose octave while in Synthesizer or Drum mode.

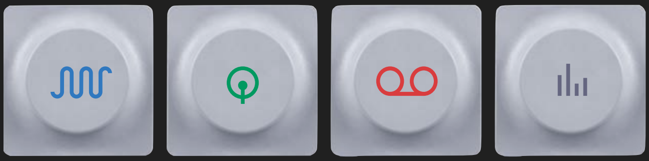
NOTE: Before you start creating your first masterpiece, read this manual carefully to avoid deleting or over-recording your work.



4 Main Modes

4.1 The Four Main Modes

Your OP-1 is designed to be easy to use, so the most important functions are located on the first keys to the left on the upper row. The four keys are grouped together and are called Main Modes.

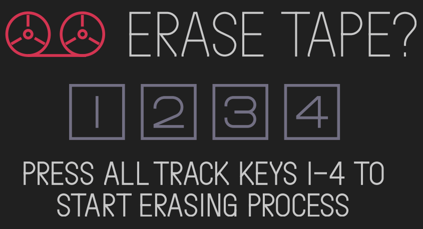


The four main modes are: Synthesizer, Drum, Tape and Mixer. Each key has a dedicated symbol and color to make it easy to navigate through the different screens and to find the appropriate key related to the currently active mode.

Example: All keys with orange symbols are related to the Tape because the tape symbol is orange.

4.2 Using SHIFT + any Main mode key

By pressing SHIFT + a Mode key you invoke special settings or functions for that mode. For Synthesizer and Drum you undo edits and tweaks that you made to the sound. For SHIFT + Tape you enter the Tape erase function.

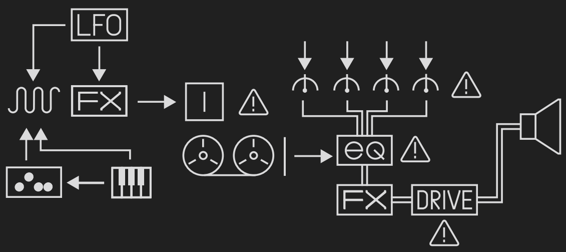


ERASE TAPE?

1 2 3 4

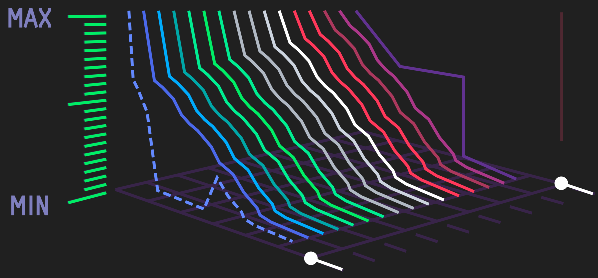
PRESS ALL TRACK KEYS 1-4 TO START ERASING PROCESS

SHIFT + Mixer takes you to the Signal Flow screen

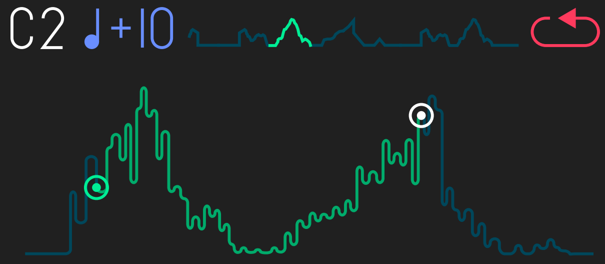


4.3 Main Modes Screen examples

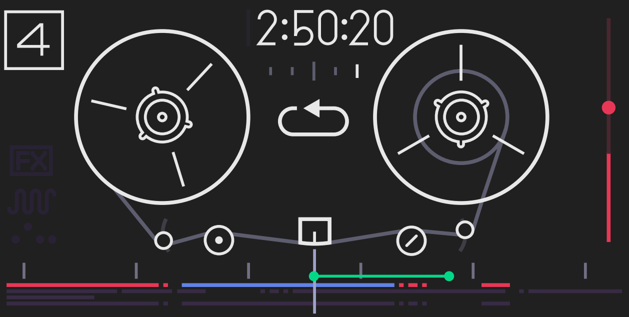
Synthesizer using String Engine.



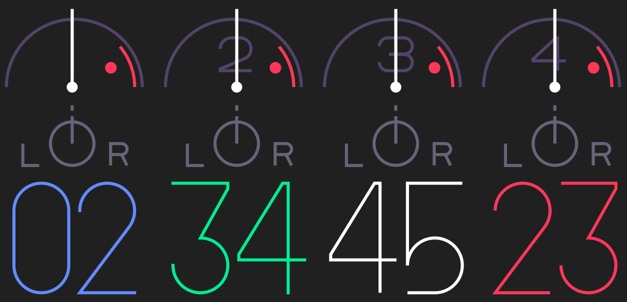
Drum using a sample

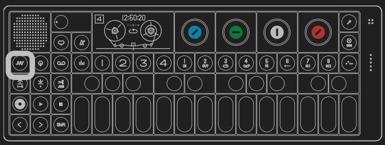


Tape



Mixer





5 Synthesizer Mode

5.1 Synthesizer Mode – Introduction

OP-1 has several original synthesizer engines. Each one has its own personality. When in Synthesizer Mode, the synthesizer engine's visual is always located under T1 and is also the first screen that will show up when you change or select a sound.

Each sound is built up from four modules located under the T1, T2, T3 and T4 keys, lined up under the display:

NOTE: The T1-T4 are soft keys, which means that in Synthesizer and Drum mode they function as described here. In Tape mode they are track keys T1-T4 and in Mixer Mode they are Mixer (T1), EQ (T2), Master Effect (T3) and Master Out/ Drive (T4).

To enter Synthesizer Mode, press the key with the blue wave symbol on it. This enables both T1-T4 and sound selection keys 1-8.

When you have pressed the Synthesizer key, first select a sound from 1-8 with the Sound keys:

1 IN
2 OUT
3
4
5
6
7 MI
8 M2

Then use T1-T4 keys to shape the sound:

T1 – Synthesizer engine
T2 – Envelope
T3 – Effect
T4 – LFO/G-force

Here follows a description of how a Sound is built up. For an in-depth description of all individual Synthesizer engines, the Envelope, Effects and LFO, please refer to the Reference chapter.

5.2 Synthesizer Engines

The first module of a sound is its engine. This is the heart of the sound and is the most important part.

It is possible to change an engine of a sound but keep the Envelope, the Effect and the LFO or G- force setting.

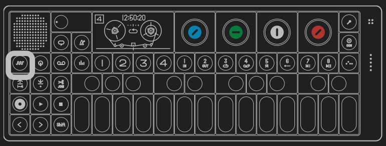
To do this, first select the Sound you want to change. Then use the T1 to T4 keys to select a specific module.

To change the Engine press SHIFT + T1. This opens the Browser screen, with the list of possible Engine choices:

FM – Frequency Modulation synthesis made easy. This is the type of engine that is found in the classic DX7 synthesizer.
Cluster – Up to six oscillators chained in a cluster.
Dr Wave – Raw 8-bit style engine.
Digital – Pure digital raw engine.
String – Physical modeling of a string instrument.
Pulse – Square wave engine.
Phase – Phase distortion type engine.

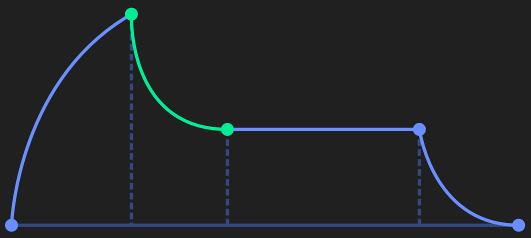
Use the Blue encoder to scroll through the list and press T1 when your choice is highlighted to exit.

More details on the different Synthesizer engines and their parameters are available in the Reference chapter.

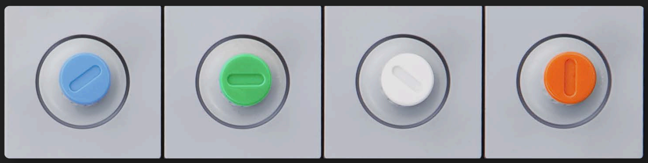


5.3 Envelope

To shape the envelope, press the T2 key. The envelope controls the amplification of a sound and is triggered when a note is played. You can control the attack, decay, sustain and release. This is called an ADSR envelope.



Use the four color encoders to shape the Envelope.



Blue – Attack, Green – Decay. White – Sustain.
Orange – Release

This will be indicated by a color change in the graphical interface as soon as an encoder is turned.

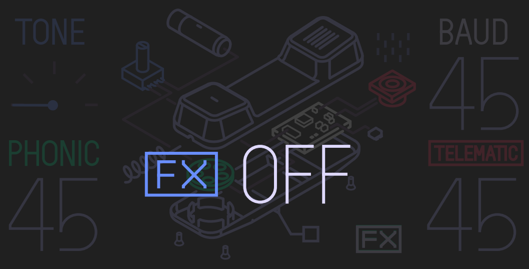
5.4 Play Mode

To enter Play mode press SHIFT while you are in the Envelope screen which is located under the T2 key. In play mode, you can select if you want your sound to be Polyphonic, Monophonic, Legato or Unison.
In play mode, you also have the portamento parameter setting.

PLAYMODE POLY
PORTAMENTO 01

5.5 Synthesizer Effect

To add an effect to a sound, press the T3 key. You may toggle an effect on and off by pressing the T3 key a second time.



To change effect, press SHIFT + T3. This enters the effect browser screen. Use the Blue encoder to scroll through the list and press T2 to make your selection.

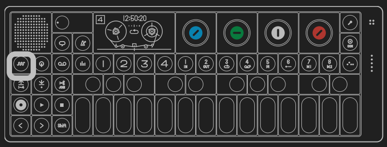
5.6 Synthesizer LFO

The LFO lets you modulate any Synthesizer Engine, Envelope or Effect parameter.

To add an LFO to a sound, press the T4 key. You may toggle an LFO on and off by pressing the T4 key a second time.

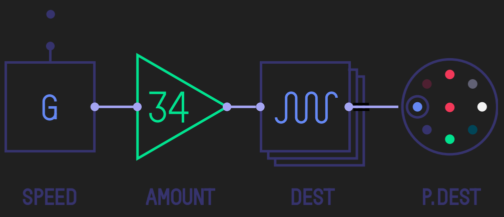
To change LFO, press SHIFT + T4. This opens a browser screen, with the list of possible LFOs:

BEND – Lets you use the Bender accessory.
CRANK – Lets you use the Crank accessory.
ELEMENT – Lets you use external elements like the built in Microphone, Line in, G-force sensor or FM Radio to modulate a sound. Select the element, amount, destination and the destination parameter.
MIDI – Route external MIDI CC to the OP-1.
RANDOM – randomize all parameters in a module. Set the speed, amount, LFO envelope and destination
TREMOLO – Lets you create different types of vibrato effects to your sound by modulating the pitch and volume. Set speed, pitch amount, volume amount and LFO envelope curve. The envelope curve applies an attack or decay curve to the speed of the LFO.
VALUE – Use this classic LFO type to change one parameter only. Set amount, speed, destination and parameter.



NOTE: Turn the ENCODERS all the way for all options under, for example, destination. The encoders click when turned, which doesn't equal changing a value. Sometimes you need to turn a couple of clicks to change a value.

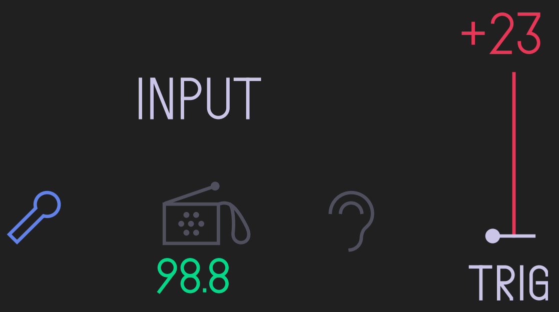
Example: ELEMENT LFO



As described earlier the Element LFO uses different external elements to control any parameter of a Synthesizer engine, Envelope or Effect. Use the Blue encoder to select your source. The options are:

G	G-force
	Mic/Line/Radio

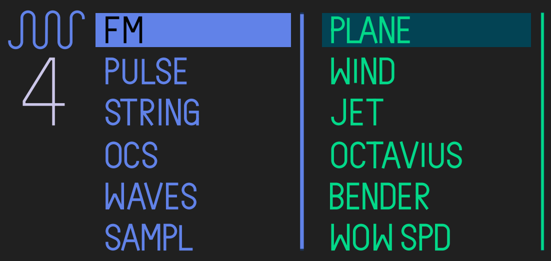
G-force is pretty straightforward, you don't need to make any further settings. When selecting option Mic/Line/Radio, you need to select the input source. Press SHIFT + Input key to select input and to adjust the gain. If Radio is selected here you may tune in to a radio station for satisfactory results.



For more information about LFOs please refer to the LFO reference section of this manual.

5.7 Changing Sounds

Consider sound selection keys 1-8 as your instant access keys. To change any of the sound 1-8 presets, press SHIFT + any key from 1 to 8 and a list of all available sound presets is shown. Select a preset by turning the Blue encoder for Engine type and Green Encoder for Preset choices.



NOTE: The difference between changing just a Synthesizer Engine (SHIFT + T1) and a Sound (SHIFT + 1-8) is that the later changes all four T1- T4 settings.

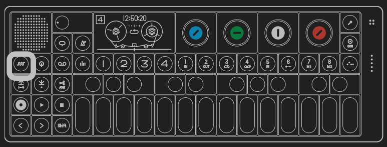
5.8 Saving a Sound

To save a sound, you have two options:

- DUMP TO TAPE – Use the LIFT key while in Synthesizer or Drum mode. Then switch to Tape, locate empty space on the tape and press the DROP key. The sound will now be converted to sound-data. To recall a sound that was dumped to Tape, press LIFT, switch to Synthesizer or Drum and press DROP.

- SAVE SOUND 1-8 – Tweak your sound on any of the sound slots from 1-8. Hold the sound key for five seconds. Sounds 1-8 are located in the SNAPSHOT folder located inside the Synth and Drum folders. Via USB, you may drag the sound you want to your desktop and rename it, or rename the sound inside the folder. Keep in mind that you may use names with a maximum of ten characters. Avoid uncommon symbols.

PRO-TIP: You may create your own folder and place it in either Synth or Drum folder to organize your files.



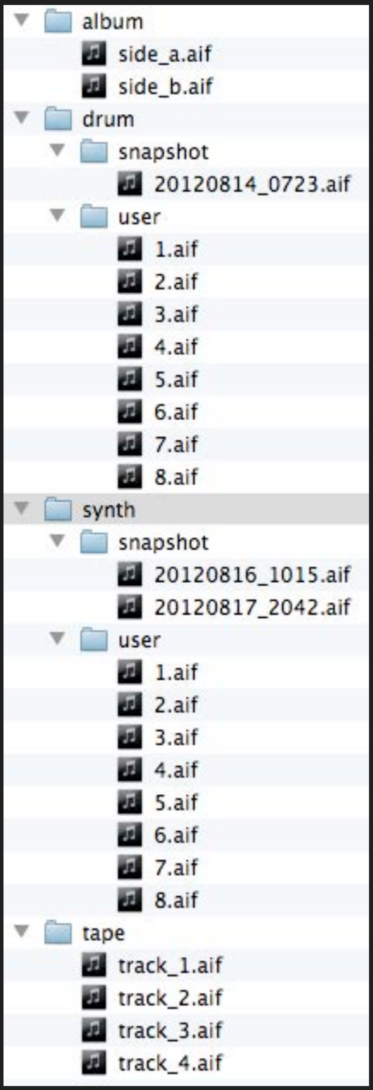
5.9 Sound File structure

The OP-1's storage allows you to add files for use for Synth and Drum sounds. It also lets you collect those files you have recorded in Tape and Album for use elsewhere. You may also manage your own presets, those which you have made in synth and saved. These are stored in the "snapshot" folders for Synth and Drum presets respectively, and default to a name containing their date of creation. Feel free to rename these, limiting the name to ten common characters.

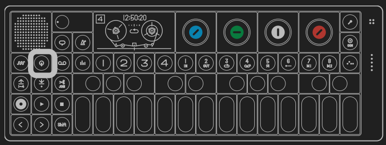
When you connect your OP-1 to your computer and press SHIFT + COM key and select DISK mode the OP-1 shows up on your desktop:

Double click the disk icon to reveal the internal OP-1 files. All Sounds, Album recordings, Tape Tracks and snapshots show up as .aif files.

NOTE: Sound presets use a special OP-1 version of the .aif format, which includes BOTH a sound preview and synthesizer data. In other words, the OP-1 synthesizer engines are not sample based but modeled sounds.



- album
  - side_a.aif
  - side_b.aif
- drum
  - snapshot
    - 20120814_0723.aif
  - user
    - 1.aif
    - 2.aif
    - 3.aif
    - 4.aif
    - 5.aif
    - 6.aif
    - 7.aif
    - 8.aif
- synth
  - snapshot
    - 20120816_1015.aif
    - 20120817_2042.aif
  - user
    - 1.aif
    - 2.aif
    - 3.aif
    - 4.aif
    - 5.aif
    - 6.aif
    - 7.aif
    - 8.aif
- tape
  - track_1.aif
  - track_2.aif
  - track_3.aif
  - track_4.aif



6 Drum Mode

6.1 Drum Mode – Introduction

The Drum Mode - entered by pressing the key with the green drum symbol - is similar to the synthesizer mode. The difference is it's use for shorter drum/ percussion sounds. Sounds can be loaded either into the Drum engine (DRUM), or made using a drum synth (DBOX).

As with Synthesizer mode, pressing the Drum key enables both T1-T4 and Sound selection keys 1-8.

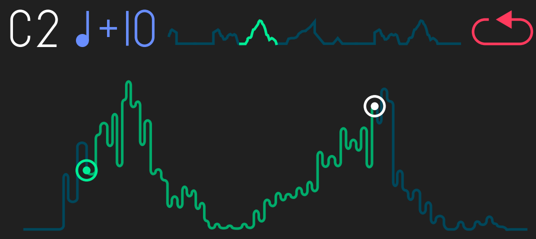
When you have pressed the Drum key, first select a sound (drum-kit) from 1-8 with the Sound keys.

Then use T1-T4 keys to shape the sound:

T1 – Drum engine
T2 – Dynamic Envelope
T3 – Effect
T4 – LFO/G-force

6.2 DRUM Sampler Engine

The difference compared to the Synthesizer sampler engine is that the Drum sampler has 12 seconds of recording time (vs. 6 seconds in the Synthesizer sampler) and has a layout function which lets you lay out parts of the sample to dedicated keys on the musical keyboard (compared to different pitch of the sound when playing the musical keyboard using the Synthesizer sampler).



The basic concept here is to record all drums in a row and keep that recording to 12 seconds. Then set in and out points of that recording and dedicate it to a certain key on the musical keyboard.

6.3 Laying out a Drum Kit

To layout a Drum Kit, press any key on the musical keyboard and start to set the In point of the sound. This can be anywhere on the sample. Then set the Out point and hit the same key on the musical keyboard. You should now hear the part of the sampling you have dedicated to that key. The tools you have to set up your drum kit are:

PITCH
Set the pitch of a part by turning the Blue encoder.

DIRECTION
Press SHIFT and turn the Blue encoder to change direction of a part.

IN POINT
Set the in point by turning the Green encoder.

FINE TUNE IN POINT
Press SHIFT and turn the Green encoder to fine tune the position of the in point.

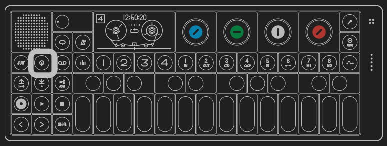
OUT POINT
Set the out point by turning the White encoder.

FINE TUNE OUT POINT
Press SHIFT and turn the White encoder to fine tune the position of the out point.

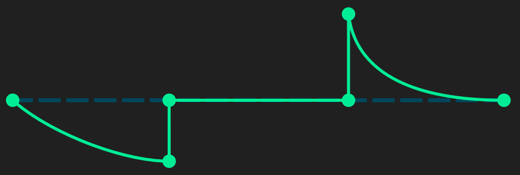
PLAY TO END, LOOP, PLAY ONCE
Turn the Orange encoder to set the play mode of a part.

LEVEL
Press SHIFT and turn the Orange encoder to set the volume level of a part.

NOTE: Remember to always select the key on the musical keyboard where you want to change sound.



6.4 Dynamic Envelope



Dynamic Envelope is specially designed for short drum sounds. Set the attack level with Blue Encoder, Mid part level with Green Encoder, Release Level with Encoder and use the Orange Encoder to adjust the region.

6.5 Importing your own sounds

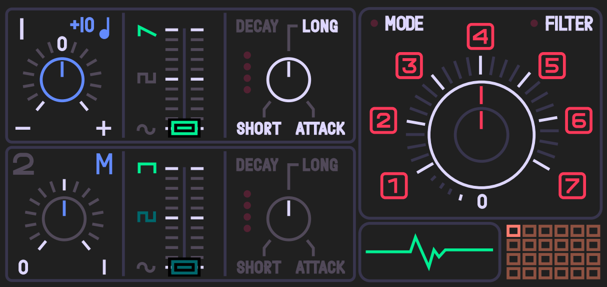
Simply create a single sound file from whatever sounds you have chosen. Remember to keep the audio file maximum 12 seconds long. Then save the sound as an .aif file. Transfer the file to the User folder located inside the Drum folder. See chapters 5.8-5.9 on how to transfer files to your OP-1.

6.6 Using OP-1 standard layout

To make sound switching between kits more logical when you have a sequence running, it's a good habit to layout your kits in the same order. The factory kits are mapped as seen at the bottom of this page.

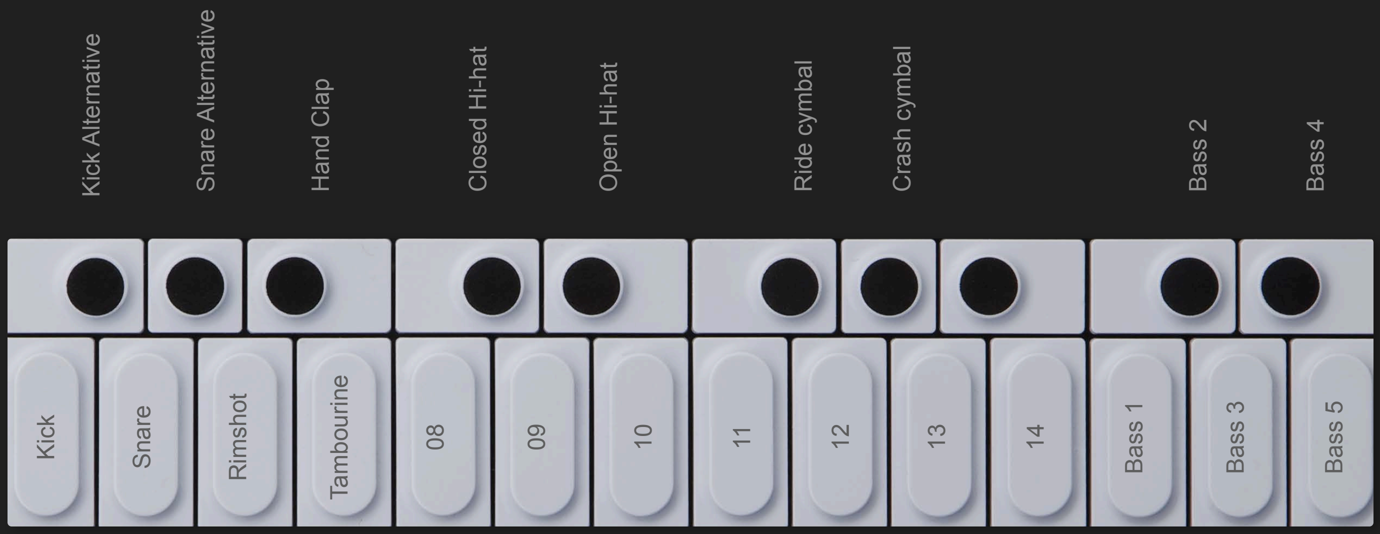
PRO-TIP: A nice way of creating fill-ins, is to have the same sequence running and switching between drum kits based on the same sounds, but mapped differently. You can also map some keys to silent parts of a sample to "mute" certain sounds.

6.7 DBOX Drum Engine


+10
0
-
+
DECAY
LONG
SHORT
ATTACK
MODE
FILTER
1
2
3
4
5
6
7
0
2
M
0
DECAY
LONG
SHORT
ATTACK

DBOX, short for DRUMBOX, is a dual oscillator synthesizer, convenient for producing drum sounds. Blue encoder adjusts pitch, Green encoder adjusts waveform, White encoder adjusts envelope. Hold SHIFT to access secondary oscillator. Orange encoder is used for Cross Modulation and, when SHIFT is pressed, Filter cutoff frequency.

Saving a sound is achieved by holding a Sound key (1-8) for five seconds, similar to elsewhere on the OP-1. The sound will be saved in Snapshot.


Kick Alternative
Snare Alternative
Hand Clap
Closed Hi-hat
Open Hi-hat
Ride cymbal
Crash cymbal
Bass 2
Bass 4
Kick
Snare
Rimshot
Tambourine
08
09
10
11
12
13
14
Bass 1
Bass 3
Bass 5

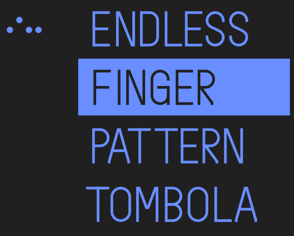
7 Sequencers

7.1 Sequencers – Introduction

OP-1 comes with four original sequencers that let you arrange notes in different ways. Both Synthesizer and Drum mode have their own dedicated sequencer memory and can have separate types active, even though only one can be played at a time.

The big difference between the Tape and a Sequencer is that Tape produces a pure audio recording, while a Sequencer stores note data. One of the reasons for using a Sequencer is that you may change or alter the sound but continue playing the same stored notes.

7.2 Selecting a Sequencer Type


ENDLESS
FINGER
PATTERN
TOMBOLA

To select Sequencer type press SHIFT + the sequencer key to enter the Sequencer Browser screen. Turn the Blue encoder to make your selection, then press the Sequencer key again to exit.

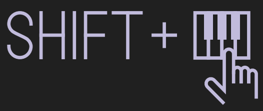
7.3 ENDLESS Sequencer

Endless is a very effective way to get sequencing done quickly. Just hold SHIFT + press any key on the musical keyboard to store a note. It automatically moves one step forward when you release the key. Hold SHIFT until you are done. Then release SHIFT and press any key on the musical keyboard to play your sequence. The maximum number of notes that can be stored is 99.

1/8
44
55%
HOLD

7.4 Endless Sequencer Functions:

INSERT NOTES
To Insert a note, press SHIFT + any key on the musical keyboard. Keep holding down SHIFT until you are done with ALL notes you want to insert.

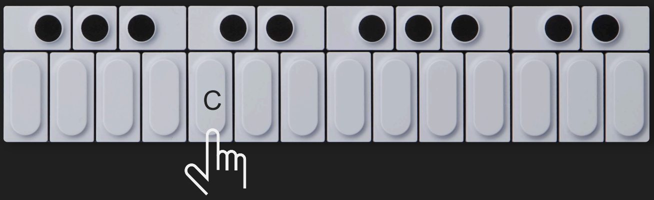


INSERT LONG NOTES
Press SHIFT + any key on the Musical Keyboard. Continue to hold the keys while pressing the Forward Arrow key (>).

INSERT SPACE
Press SHIFT + the Forward Arrow key (>).

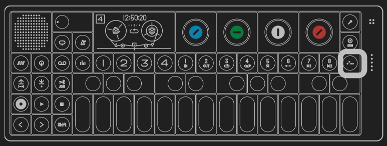
TO DELETE LAST NOTE
Press SHIFT + the Rewind Arrow key (<).

PLAY A SEQUENCE
To play a sequence just press any key on the Musical Keyboard. The pitch of the played notes will change depending on what key you press. This is called Key Transposition. To play the original pitch of the notes play the C key on the Musical Keyboard.

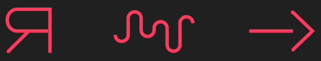


PLAY AND HOLD A SEQUENCE
Turn the Orange Encoder until HOLD lights up.

HOLD

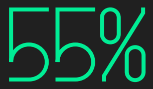


CHANGE PLAYBACK DIRECTION OF A SEQUENCE
You have three different options for how you want the notes to be played back. Forward, Reverse or Random. Change direction by holding SHIFT and turn the Orange Encoder.



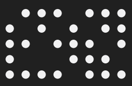
SET NOTE LENGTH
Note length is basically a way to define how many notes (beats) that will be played in one bar. This is related to the Master Tempo that you set in Tempo and to the bars in Tape mode. If you set 1/16, one bar in tape will be 16 notes or beats. Change note length by turning the Blue encoder.

SWING
Swing is a way to slightly alter the timing of notes played in a sequence. To add swing turn the Green encoder. No swing is a 50% setting.



NOTE: Remember to check if you have applied swing when you record multiple layers of sequenced material to tape if you want them to be in absolute sync.

APPLY A PATTERN TO YOUR SEQUENCE
The Endless sequencer has a function which lets you add a pattern to your sequence. Turn the White Encoder to apply a pattern. A single dot means there's no pattern applied. (turn the White encoder counter clockwise all the way until only a single dot is shown)



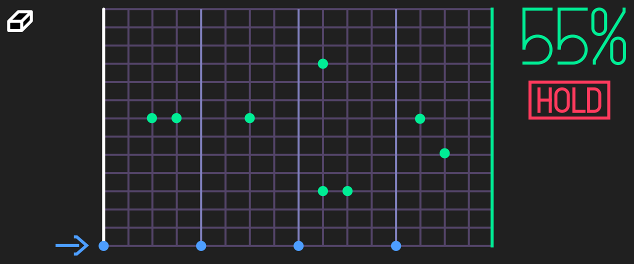
ROTATE A PATTERN
By holding SHIFT + turning the White encoder, you can rotate the dots within the pattern.

CRANK MODE
SHIFT + Blue encoder activates Crank mode, which gives you manual, music-box style playback control.

NOTE: In Endless, you may use the arrow keys to change octave in playback mode.

7.5 PATTERN Sequencer

Pattern is a classic grid type sequencer found in many hardware and software instruments. This is a 16 step sequencer, particularly useful for sequencing drum patterns.



7.6 Pattern Functions

INSERT NOTES
To Insert a note press SHIFT + any key on the Musical Keyboard. Keep holding down SHIFT until you are done with ALL notes you want to insert.

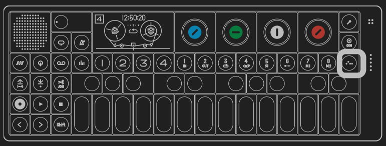
ERASING NOTE
Hold down SHIFT and turn the Blue encoder.

MOVING THE VERTICAL CURSOR LINE
Press Arrow keys or turn the Blue encoder to move the horizontal cursor line, by doing this you also select which note you want to focus on when erasing.

SWING
Swing is a way to slightly alter the timing of notes played in a sequence. To add swing turn the Green encoder. No swing is a 50% setting

NOTE: Remember to check if you have applied swing when you record multiple layers of sequenced material to tape if you want them to be in absolute sync.

ROTATE NOTES
Hold SHIFT + turn the Green encoder to rotate all notes. This might be good when you have entered the notes in Live Mode.



LIVE MODE
Turn the Orange Encoder until HOLD lights up. The sequencer starts, and the white horizontal cursor moves across the sequence. Press SHIFT + any key on the Musical Keyboard to insert a note at the current cursor position.

LIVE EDIT MODE
Press SHIFT + any Arrow key while the sequencer is running to break the cursor connection and let you edit the notes as you would in normal stopped mode.

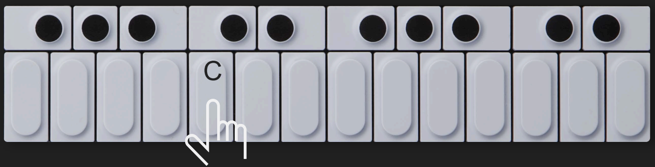
SET SEQUENCE LENGTH
Turn the White encoder to adjust the playback length of the sequence.

MOVE SECTION
If you hold SHIFT + turn the White encoder you may move the played back section around within the sequence. Great for fill-ins!

PLAY AND HOLD A SEQUENCE
Turn the Orange Encoder until HOLD lights up.

HOLD

NOTE: To key transpose a Pattern sequence, switch to Synthesizer, Drum, Tape or Mixer mode and press any key on the Musical Keyboard. To play the original pitch of the sequenced notes, play the C key on the Musical Keyboard.

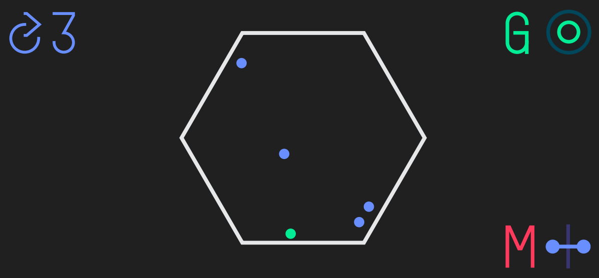


CHANGE PLAYBACK DIRECTION OF A SEQUENCE
You have three different options for how you want the notes to be played back. Forward, Reverse or Cycle. Change direction by holding SHIFT and turn the Orange Encoder.

⇆ Я →

7.7 TOMBOLA Sequencer

Use Tombola when you want to create a random sequence. Just throw a couple of notes into the Tombola and then set the gravity, mass and spinning speed. The harder/faster a note bounces the louder the sound will play.

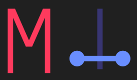


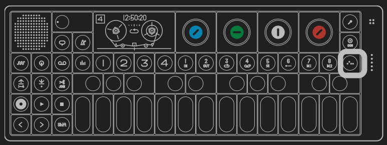
7.8 Tombola functions

DROP NOTES INTO TOMBOLA
Play any key on the Musical keyboard to drop a note into the Tombola.

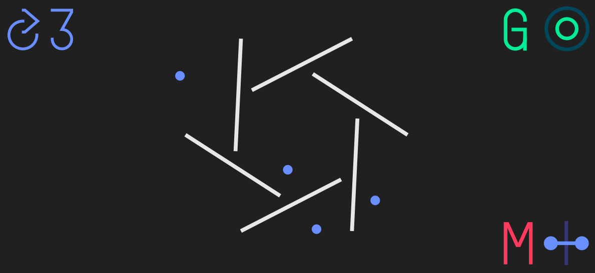
ADJUST BOUNCINESS
Turn the Orange Encoder to adjust the bounciness of the notes. The harder a note hits the wall of the the Tombola the louder it will play. This is measured in amount of mass.

ADJUST HEAVINESS
This is measured in amount of Gravity. Turn the Green Encoder to set the gravity.





RELEASING NOTES
Turn the White Encoder to open the Tombola and release the notes.



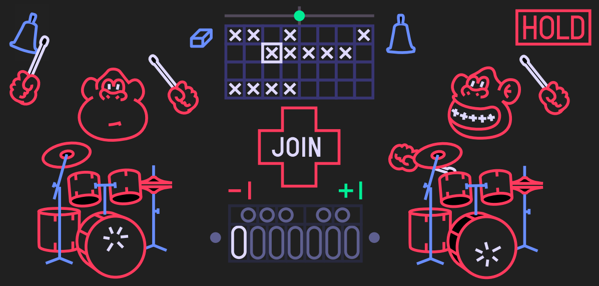
TOMBOLA SPEED
Turn the Blue Encoder to adjust the speed and the direction of rotation of the Tombola.

CRANK MODE
Engage Crank using SHIFT + Blue encoder. You may now spin the Tombola by hand, just using Blue.

PRO-TIP: Keep the Tombola open and set a high rotation speed. This creates a random type of echo effect.

7.9 FINGER Sequencer

The Finger Sequencer lets you play two sequences in combination with one another. Finger works the same in Synth and Drum modes (animations differ).



Each white key on the Musical Keyboard represents a pattern. Each pattern is visualized as the top middle, checkered rows. Each checked row may be filled with either Synth notes or Drum triggers. You will recognize notes and trigs as the small white crosses. The Green dot represent the pattern's swing setting.

7.10 FINGER Functionality

When Finger is activated for Synth, two keyboard players appear. When used with Drum, there are two gorillas. Each sequence, activated by pushing a white key on the Musical Keyboard, is populated by crosses by default. Press and hold a key on the Musical Keyboard to commence playback. Depending on which playback mode you are using (chosen using SHIFT+Orange encoder), pushing a second key on the Musical Keyboard will now either layer a second pattern (JOIN), play when you release the previous one (REPLACE), or play fill ins (FILL IN). Using the Orange encoder allows you to turn HOLD playback mode on for Finger.

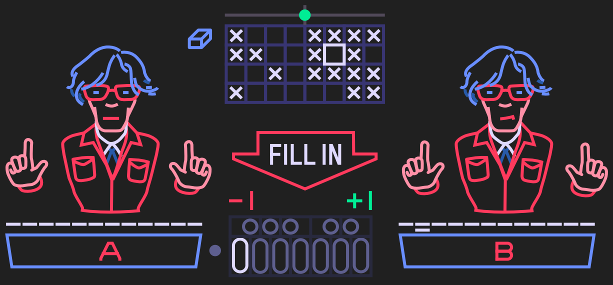
INSERT NOTES
To insert a note press SHIFT + any key on the Musical Keyboard.

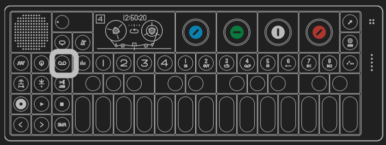
MOVING THE CURSOR AND ERASING NOTES
Blue encoder moves the box cursor inside the sequence. Hold down SHIFT and turn the Blue encoder to erase while moving the cursor.

SET SEQUENCE LENGTH
White encoder adjusts the length of a pattern.

SWING
To add swing turn the Green Encoder. No swing is a 50% setting.

NOTE: Remember to check if you have applied swing when you record multiple layers of sequenced material to tape if you want them to be in absolute sync.

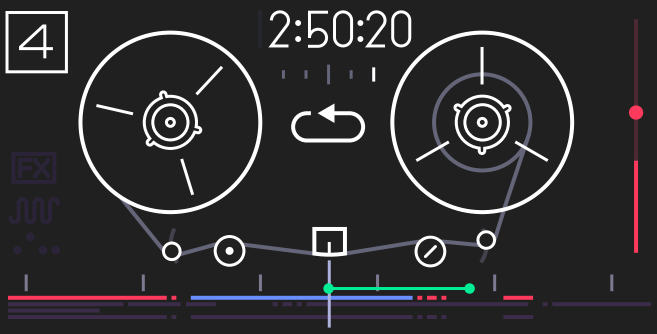




8 Tape Mode

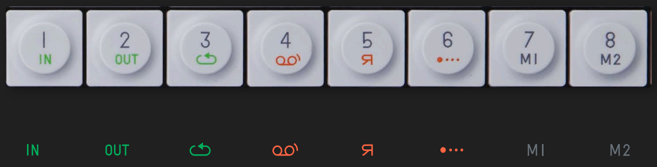
8.1 Tape – Introduction

Your OP-1 has a built in tape feature with 6 minutes of recording time (in normal tape speed and 44.1 kHz/16 bits). It has 4 individual tracks. To enter the Tape Mode press the Tape key with the orange tape symbol on it.



This mode changes the function of T1-T4 which now become track 1-4:

The Sound selection keys change into Tape Tricks 1-8:



8.2 Record to tape

1. Select the sound which you want to record.
2. Press the Tape key to enter Tape Mode.
3. Select a track to record to by pressing any of the track keys T1-T4.
4. Set recording level with the Orange encoder. (This is also the main level for Synthesizer and Drum sounds).
5. Press REC + Play to start recording.
6. Play the Musical Keyboard.
7. Press STOP when done.
8. Press Rewind (left arrow) to rewind the tape.
9. Press Play to listen to your recording.

8.3 Overdubbing

The Tape always overdubs if there’s recorded material on the same track. To avoid overdubbing, lift any pre-recorded takes out from the tape location.

8.4 Rewind and Fast Forward

Use the arrow keys to rewind and fast-forward the playback of the tape.

8.5 Jump to the start of the tape

Press STOP + Left Arrow key to jump to the very beginning of the tape.

8.6 Jump to the end of the Tape

Press STOP + Right Arrow to jump to the end of the last take on the tape.

8.7 Reverse Playback

To play the tape reverse you have two choices:

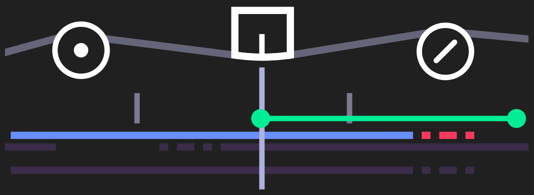
Press SHIFT + Play.
Press the Reverse Tape Tricks Key when the tape is rolling.

8.8 Recording Level

Turn the Orange encoder to set the recording level.

8.9 Tape Editing

First select the track you want to edit. Recorded material shows up as grey lines and is referred to as takes. When an active track has recorded material, the lines turn orange. To edit a take, use Scrub, Rewind, FF or press STOP to center it under the tape head:



A take turns blue when it's in position and ready for editing or moving. These are the editing actions for an active take:

SCRUB – Use Blue encoder to scrub though the tape.

SLIDE – Use SHIFT + Blue encoder to slide a take. You may slide a take until either of its start or end point interferes with another take.

↑ LIFT – Press the Lift key (Arrow up) to lift a take. The take is now in the memory. To undo press the Drop Key to place it at the center of the tape head. You may repeatedly press the Drop key to paste multiple takes. The tape moves each time to the end of a dropped take. Lift is also used as a way to delete a take.

↓ DROP – Use this as way to place the last take stored in memory.

✂ SPLIT – This splits a take.

I–4 LIFT ALL – Hold down SHIFT + Lift to lift all tracks into memory.

JOIN JOIN – Press SHIFT + Split to join takes. This function joins the next closest take on either side of the active one. You may repeatedly use Join to join multiple takes.

●–● REGION LIFT – Use the loop in and out points to define the part you want to lift.

8.10 Advanced LIFT

Besides recording, the tape can also be used as a sketchpad for creating layered sounds. Using the tape this way let's you build up a sound layer by layer on all four tracks and lift it (use LIFT ALL to lift all tracks) and then drop it in either the Synthesizer sampler or Drum sampler.
You may also save a sound to tape by pressing LIFT in any of the Synthesizer or Drum sounds and then select Tape mode and press Drop. This creates a data recording of all parameters and/or samples on the active tape track. To recall the sound, lift it from tape and drop it back into any sound from 1-8. For this function to work, the take has to be exactly the same and an isolated take as it was when it was dropped.

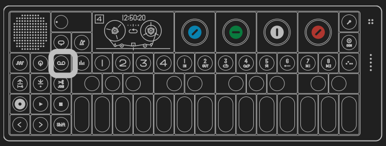
8.11 Changing Tape Speed

You may change the speed of the tape whenever you want, even during recording. To do this, turn the White encoder. If you hold down SHIFT and turn the White encoder the tape speed is changed in fixed steps. The sound quality changes in the same way as a real tape when changing speed – the faster the tape speed, the higher the quality of the recording.

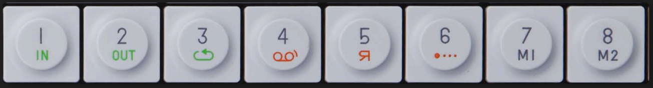
8.12 Advanced Recording Techniques

A quite special recording technique is to put the tape in Rec Arm mode and control the speed manually. To do this press SHIFT + Rec. You are now recording but the reels are still. To move the tape back and forth, turn the Blue encoder. Depending on how quick you turn the encoder the pitch of the recording will vary. Another great recording trick is to turn the out-to-in function on, found under the Mic key. This let's you record everything you hear to a selected track. This also works as a bounce recording function.

A nice option for additional recording control is using the OP-1 accessory Crank. This will give you music-box-style control over your Tape recording.



8.13 Tape Tricks



When in Tape (or Mixer mode) the sound selection keys 1-8 turns into Tape Tricks keys:
The Tape Tricks are shown under numbers 1-8. Tape Tricks are a collection of functions made to interfere with the Tape or the Mixer in different ways. They are implemented to open up for live tweaks and quick key mixing effects.

IN LOOP IN – Sets the loop in point of the tape.

OUT LOOP OUT – This sets the loop out point.

↺ LOOP TOGGLE – Toggles loop on and off.

oo BREAK – Stops the tape. If a loop is active it will continue in the background to keep the break in time.

Я REVERSE – Change direction of the tape.

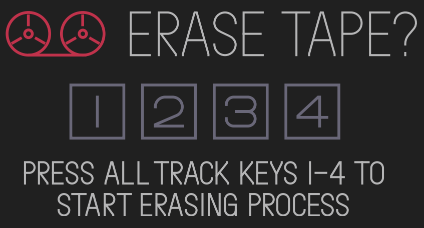
●••• CHOP – A tempo locked repeat type of effect.

M1 MEMO 1 – Memorize any parameter in Tape or Mixer for instant recall. To use this, hold down the key and turn any encoder while in Tape or Mixer screen. Release key when done. Press the key again to instant recall the changed parameter. This is great for switching between different EQ settings or to turn up the effect level when the tape is running.

M2 MEMO 2 – Memorize any parameter in Tape or Mixer for instant recall.

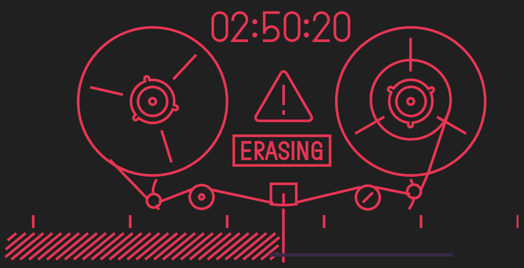
8.14 Erasing Tape

To completely erase the tape and all recorded material, press SHIFT + Tape key. For good reasons you have to press all T1-T4 keys to start the erasing process.



ERASE TAPE?
1 2 3 4
PRESS ALL TRACK KEYS 1-4 TO START ERASING PROCESS

Once all keys are pressed there’s no way back. Your tape will be wiped forever.

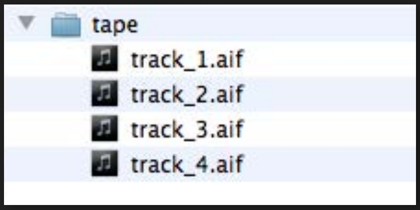


NOTE: Connect your OP-1 to your computer and transfer the Tape if you want a backup or need to free up space.

8.15 Backing up your Tape

To backup your tape, connect your OP-1 to your computer and press SHIFT + COM. Select Disk Mode. The OP-1 will show up on your desktop as a disk.

Locate the folder named "tape" and copy the files named "track_1.aif", "track_2.aif", "track_3.aif", "track_4.aif". Drag all track files to your computer's desktop.

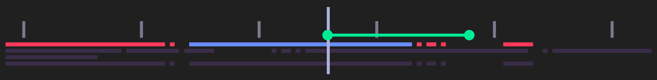

tape
track_1.aif
track_2.aif
track_3.aif
track_4.aif

You have now made a backup of the Tape as four individual audio tracks.

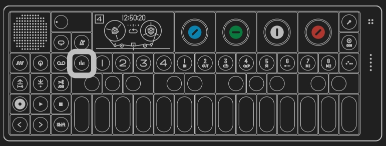
NOTE: No Mix, EQ, Master effects or Drive will be applied to individual Tracks when exported. To make a final mix of your Tape, record to Album and backup the Album file. The album file will be located in Album, "SideA.aif" or "SideB.aif"

8.16 Bars

When Beat Match is selected in Master Tempo, you'll notice bar markers just above the tape tracks. One bar is 16 beats which means if you enter 16 steps in the Endless step Sequencer and set it to 1/16 and record it, it will fit exactly in one bar on the tape.



To jump from Bar to Bar, press SHIFT + Rewind (<) or SHIFT + FF (>)



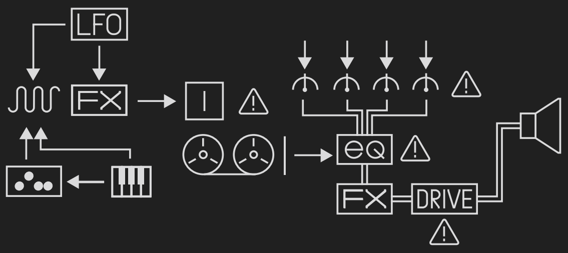
9 Mixer

9.1 Mixer – Introduction

Mixer is the final stage of the sound path. Its main function is to set the individual level and pan of the four tape tracks (T1), to adjust the master EQ (T2), add a master Effect (T3) and to add drive to your mix (T4). But as it is also the final destination for all sound, it should be worth noting how the sound travels inside your OP-1. This is called the Sound Path.

9.2 Sound Path

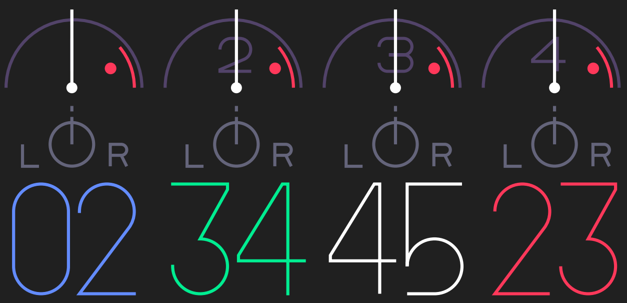
The Sound Path is the way the sound moves from the moment you hit a key on the musical keyboard or press play on tape, until it reaches the speaker or line out. To help you keep an eye on this, there is a Sound Path screen in Mixer mode that you may check at anytime. To enter the Sound path screen, press SHIFT + Mixer key.



NOTE: A warning symbol will light up when any critical level is set to zero.

9.3 Mixer

The mixer transforms the four Tape tracks into one stereo signal. To enter the mixer, press the Mixer key. Then press T1 to enter the mixer main screen.



In the Mixer main screen, you adjust the individual level and Pan Left/Right of Tape tracks 1-4

To adjust the level of a tape track turn any encoder to set the level from 0-99

Track 1 level – Blue encoder
Track 2 level – Green encoder
Track 3 level – White encoder
Track 4 level – Orange encoder

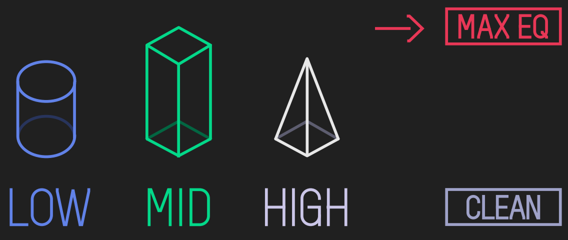
To set the Pan Left/Right

Hold SHIFT + turn the appropriate Encoder for the relevant Track, to adjust the Pan Left/Right.

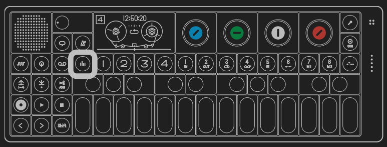
9.4 EQ

EQ means equalizer and is the word for a filter that let's you adjust the low, mid and high frequencies of a sound. In the case of the Mixer, for the final mix. When the sound enters the EQ it comes as a mixed down stereo signal. (The stereo signal was just mixed down in the main Mixer screen).

Press T2 in Mixer mode to adjust the EQ:



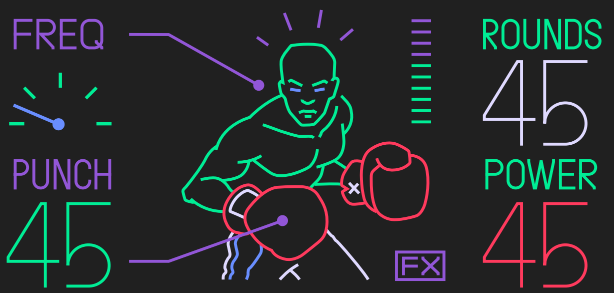
- Low (bass) – Turn the Blue encoder to adjust the low frequencies.
- Mid – Turn the Green encoder to adjust the mid frequencies.
- High (treble) – Turn the Green encoder to adjust the higher (brighter) frequencies.
- EQ Amount – Turn the Orange encoder to adjust the overall EQ level. Turn counter clockwise for a clean signal with no EQ applied.



9.5 Master Effect

Master effects are the same effects found in Synthesizer and Drum mode, but modified for stereo.

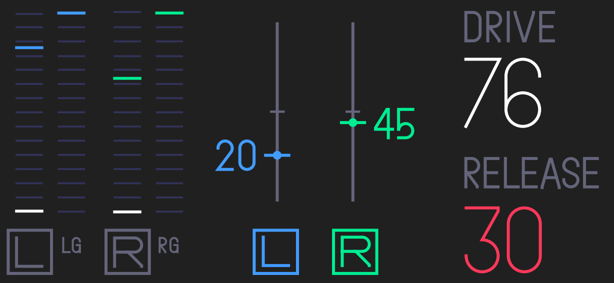
To add a master effect, press the T3 key. You may toggle an effect on and off by pressing the T3 key a second time.



To change the effect used, press SHIFT + T3. This enters the Master effect browser. Use Blue encoder to scroll through the list and press any key (except the musical keyboard) to make your selection.

9.6 Master Out

The master out screen is found under T4:



Here you adjust:

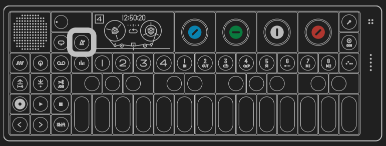
- The master balance Left/Right
- Add DRIVE
- Adjust the RELEASE of the Drive

DRIVE narrows the difference between high and low audio levels, and makes the output sound louder and more compact. At very high levels of drive, the audio starts to sound distorted.

RELEASE sets how quick the drive will narrow the difference between high and low audio levels, and at mid to long release times, you'll start to notice the drive as a "pumping" sound.

You may also use drive to add texture and to make your final mix more dirty and raw.

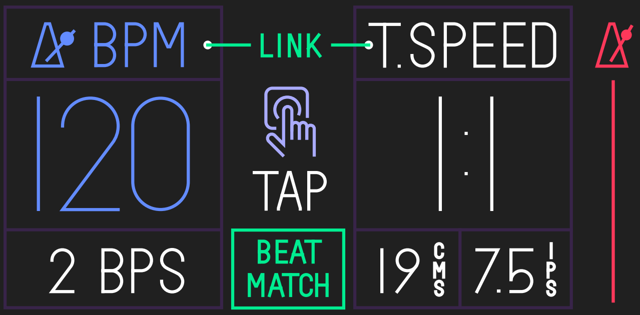
PRO-TIP: Hold SHIFT while turning the Blue or Green encoder to adjust both LEFT and RIGHT at the same time.



10 Tempo

10.1 Tempo – Introduction

In Tempo, you set the master tempo for all sequencers. You can switch between Free, Beat Match and Sync modes, and you'll also find the Metronome here.



10.2 Setting the Tempo/Tap Tempo

To set the tempo you have two choices:

- Turn the Blue encoder
- Tap the tempo – Do this by hitting the tempo key multiple times until you get the desired tempo.

10.3 Using the Metronome

To use the metronome, turn the Orange Encoder until you get your desired pitch. To start the metronome, press Play.

10.4 Free Mode

In Free mode the Tempo and Tape speed are independent of each other.

10.5 Beat Match

Beat Match is a concept of keeping the Tempo and the Tape speed in sync. When Beat Match is turned on, (Turn the Green Encoder until Beat Match lights up) the current tempo is locked to the Tape speed and dimmed. This means that you now have to adjust the tape speed to change the tempo. If you turn Beat Match on and switch to Tape mode, you'll notice that Bars have appeared above the tape tracks. These Bars are your guidelines when recording in sync. One bar is 16 beats long. Now, play a sequence and adjust the tape speed, you will hear the sequence play slower if you turn down the tape speed, and faster if you turn tape speed up. However, the pitch won't change.

This is the beauty of Beat Match, to have a drum beat playing using the sequencer and have recorded material played back from Tape in sync at the same time. Add some tape tricks to that and you have a nice live-tweaking set-up.

PRO-TIP: Record different variations to single bars and use the arrow keys explained in the Bars section 8.1-8.6 to easily move the playback loop between the variations.

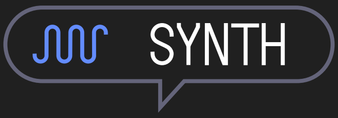
10.6 Sync Mode

Sync mode means the OP-1 is listening to whatever external tempo you may be feeding it via USB. This lets you slave tempo lock the OP-1 to MIDI Time Code (MTC) sent from external sequencers.

11 Help

11.1 The Help Button

Your OP-1 has a built-in Help function. Pressing the Help Key at anytime brings up a Speech Bubble which tells you what mode you are in and what Sound is selected. By holding down the Help Key and pressing any key you get the Key name and function of that specific key.

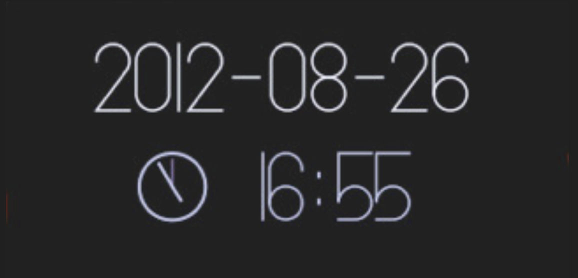


SYNTH

PRO-TIP: Hold down Help while playing the musical keyboard to get note information.

11.2 Tools

Press SHIFT + Help key to enter TOOLS. Here you set the time and date, and maybe you'll find a calculator here in the future...

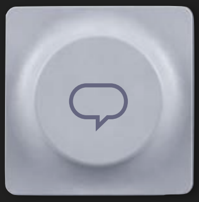


2012-08-26

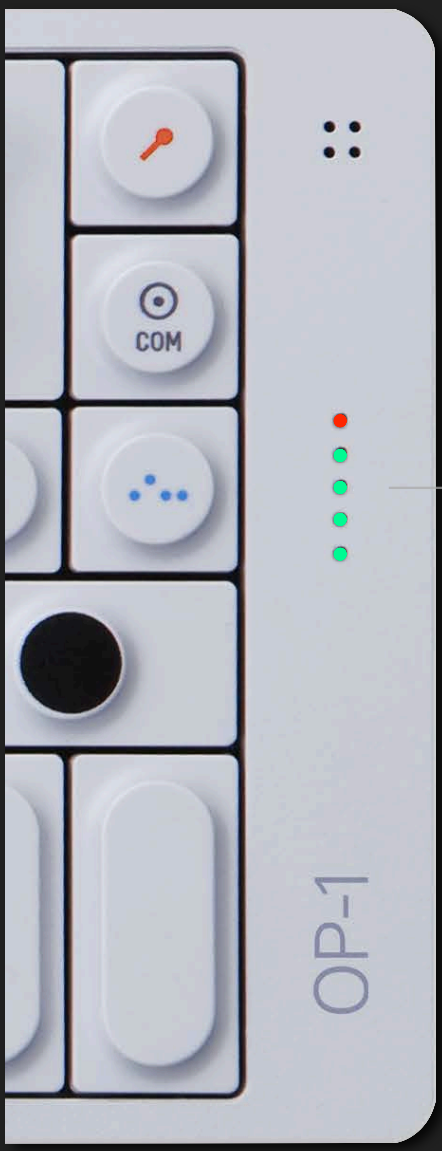
16:55

BLUE encoder – MONTH/YEAR
GREEN encoder – DAY
WHITE encoder – HOUR
ORANGE encoder – MINUTE

11.3 Battery level



When you hold down the Help key you can check the battery level indicated by the VU/Battery meter located on the right side of your OP-1.



The Battery level is indicated by the LED array on the right side of your OP-1.
All LEDs lit (including the red) indicates a fully charged battery good for around 16 hours of heavy use. The stand-by time is approximately 2 years.

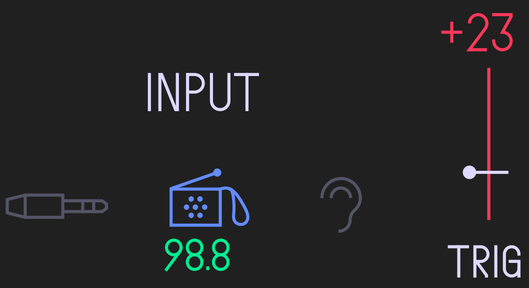
12 Recording External Sources

12.1 Using the Mic/Input Key

The Mic/Input key (with the microphone symbol on it) is used when you need to record any external audio.

The sources available for recording are:

- Line in
- Built-in Microphone
- Built-in Radio
- Output to Input (the ear symbol)



The Mic/Input key works quite similar in any mode on the OP-1. Let us go through some of the Main Modes

12.2 Mic/Input Key in Synthesizer and Drum Mode

Use the Mic/Input key when you have a Sampler engine selected to start to sample. Choose your desired source by turning the Blue Encoder. Use external audio to control the Element LFO

12.3 Mic/Input Key in Tape Mode

Pressing the Mic/Input key in Tape mode lets you toggle external audio ON/OFF. This lets you mix in some radio playing in the background, or using what's coming via Line In and mix that with your recorded material. (A great way to connect a second OP-1 and control sound levels of both units with one Master Volume Knob).

12.4 Sampling using the Built in Microphone

Press SYNTH
Press SHIFT + 1-8
Choose SAMPLER
Press 1-8
Press SHIFT+MIC
Choose microphone as input
Adjust gain and threshold settings, ORANGE+WHITE
Hold any key and speak into the microphone
Release key
Play the keyboard and enjoy the sound of your voice.

12.5 Creating a Drum Kit from FM Radio Waves

Press DRUM
Press SHIFT+1-8
Choose any sample based kit
Press 1-8
Press SHIFT+MIC
Choose FM radio for input using the Blue encoder and find a signal using the Green encoder.
Adjust gain and threshold settings using Orange and White encoders
Hold a key to start sampling
Release key
Play the keyboard and adjust start/stop positions using encoders.

IN MIXER MODE

Same functionality as in Tape Mode.

NOTE: To switch source in Tape or Mixer mode, press SHIFT + Mic/Input key. This let's you switch sources and adjust the level.

PRO-TIP: Connect a 3.5 mm audio cable (or headphones) to Line in and use as an external antenna. (There is also an OP-1 antenna, sold separately).

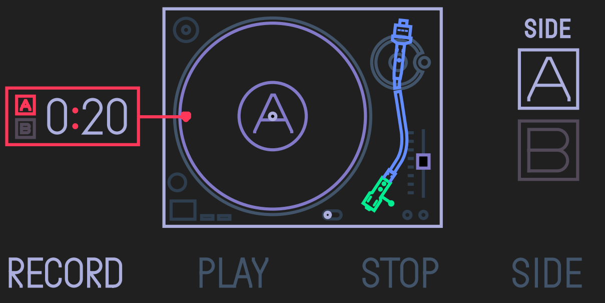
13 File Rendering and Transfer

13.1 Album

The Album function lets you mix down all four tracks from Tape into stereo files saved to the OP-1. Album is useful when you want to record any Tape Tricks, EQ, effects or live jamming. You may also play the synthesizer simultaneously on top.

You have two sides of the record – Side A and Side B each have a recording time of 6 minutes. Just switch sides to record to the other side. The recordings will still be there if you Power off and back on. Remember to export a recordings over USB before you record to the same side a second time, as this will overwrite what was previously there.

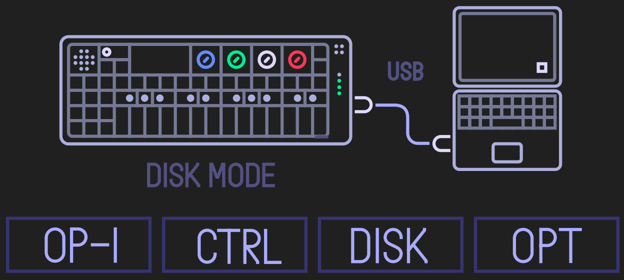
To record press the RECORD Key (T1) and then switch to Tape and press Play. When you are done switch back to Album and press STOP.



The Album records directly from Master out, which means that any EQ, Master Effect or DRIVE you have added will be applied to the sound.

13.2 COM

The Album key's alternate use is to get to COM mode. You get there by pressing SHIFT + Album key. COM mode turns your OP-1 into a controller or storage device.

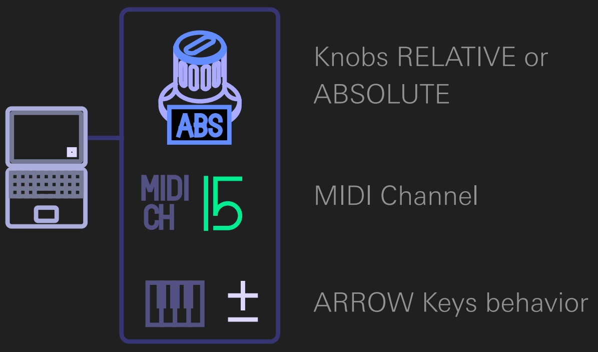


13.3 OP-1 Mode

This is the mode which we've covered mostly so far, where your OP-1 works as a self contained, stand-alone unit. Activating this mode is done from COM mode. Here press the OP-1 Key (T1) for getting to the standard OP-1 mode. In this mode, the OP-1 works as a stand-alone unit. When connected via USB in this mode, the OP-1 listens to and transmits MIDI-notes on MIDI channel 1 by default. This can be changed by using SHIFT + Blue Encoder.

13.4 Controller Mode

Controller Mode makes your OP-1 a MIDI controller keyboard. Use Shift + the encoders to set the behavior of the encoders and Arrow Keys. You may also switch MIDI channels by using SHIFT + Green encoder.



13.5 DISK Mode

By pressing the DISK Key, your OP-1 turns into a storage device. It will show up on your computer's desktop when connected via USB.

13.6 OPT Mode:

The OPT Mode (OPTION Mode) disables USB charging of the OP-1, without having to pull the USB-cord.

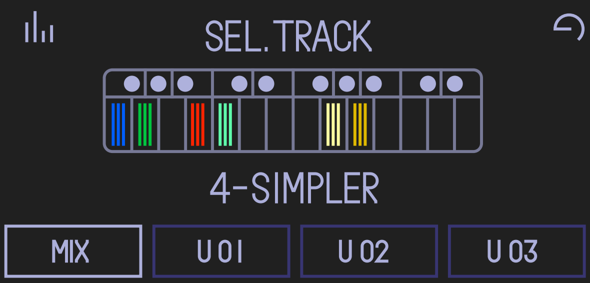
OPT Mode is activated by pressing SHIFT+COM and then T4. From there, turn Blue encoder to toggle USB charging on/off. OPT Mode is useful when in a setup with a ground loop making noise. Regardless of this setting, your unit will still charge if powered off, or if it runs out of power, as long as it remains physically connected via USB.

13.7 Sequencing External Equipment

Your OP-1 is always sending MIDI data out, even if you're not in controller mode. This way you may connect the OP-1 via USB and use any of its built in sequencers for controlling software synthesizers or other connected hardware, configured to receive MIDI.

13.8 Controlling Ableton Live

OP-1 integrates as a configured control surface for Ableton Live. If you don't plan on using OP-1 for controlling Live you might consider skipping this section.



Start by downloading, unzipping and installing the OP-1 Ableton Live script, available from the Teenage Engineering Library web (direct link).

13.81 Mac OS X Install

Right click the Live app icon (typically found in your Applications folder, inside the Live 8.x.x folder). Click "Show package contents". Navigate to: ...Contents/App-Resources/MIDI Remote Scripts.

Drop the OP1 folder into the MIDI Remote Scripts Folder.

13.82 Windows Install

Look for the MIDI Remote Scripts directory and drop the OP1 folder inside. If you are using Live 8.3, the default location will be any of the following:

- Windows Vista and 7
C:\ProgramData\Ableton\Live 8\Resources\MIDI Remote Scripts.

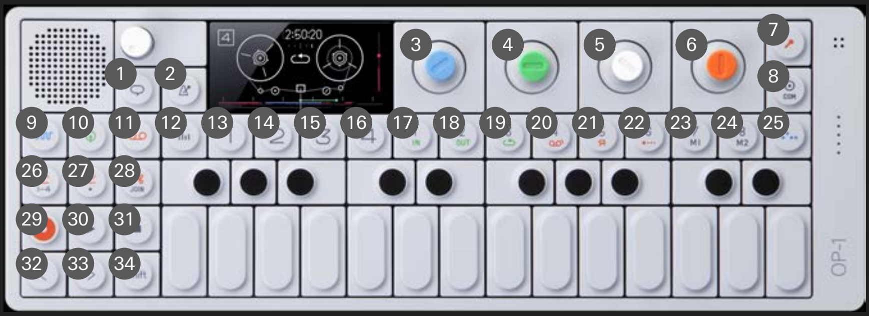
- Windows XP
C:\Documents and Settings\All Users\Application Data\Ableton\Live 8\Resources\MIDI Remote Scripts

13.83 Finalize

Once installed pick the OP1 as Control Surface under the MIDI/Sync tab in Live's preferences. Make sure OP1 MIDI Device is selected for both Input and Output.

Press SHIFT + COM and then put the OP-1 into CTRL Mode using T2.

13.84 Ableton Live Key Assignments



With the Ableton Live Script, your OP-1 is now integrated to run keys as numbered below. We are using four modes here as well, though very different as they correspond to Live's functionality.

Modes

9 [Synth] Perform Mode

Use arrow keys to shift octave and note keys to play, as usual.

10 [Drum] Clip Mode

- A red box will show you the area of clips you currently control. Use Keys 7/8 to move the red box up/down. Use keys 32/33 to move it left/right.
- Key notes are used for launching individual clips inside the red box. For stopping the clip, use SHIFT and press the same key again.
- Use last key note to trigger entire scene, and SHIFT + note to stop all clips in the scene.

11 [Tape] Transport Mode

- Arrow keys move the current song position one beat.
- SHIFT + Arrow keys offset loop.
- Note keys are used to set the length of the loop. The length increments are in multiples of two per key (1, 2, 4, 8... 4096)
- SHIFT + Note key defines loop without changing loop start.

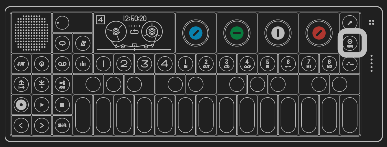
12 [Mixer] Mixer Mode

- Arrow keys navigate on mixer tracks.
- Note keys select mixer tracks directly.

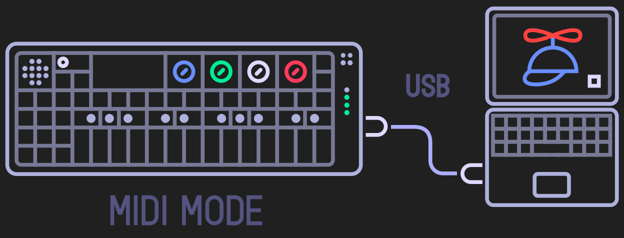
Global Assignments

#	[Key Name]	Function
1	[Help]	Tap Tempo
2	[Metronome]	Metronome
3	[Blue]	Select Track Volume
4	[Green]	Select Track Pan
5	[White]	Select Track Send 1
6	[Orange]	Select Track Send 2
7	[Mic]	Red Box Up
8	[Album]	Red Box Down
13	[T1]	Predetermined Bank Select
14	[T2]	User Bank 1 Select
15	[T3]	User Bank 2 Select
16	[T4]	User Bank 3 Select
17	[Loop In]	Punch In
18	[Loop Out]	Punch Out
19	[Loop]	Loop
20	[Break]	Overdub
21	[Reverse]	Select Track Mute
22	[Chop]	Select Track Solo
23	[M1]	Select Track Arm
24	[M2]	Reset Mute/Solo/Arm
25	[Sequencer]	Back To Arrangement
26	[Lift]	Open/Close Browser
27	[Drop]	Arrangement/Session Toggle
28	[Split]	Open/Close Detail
29	[Rec]	Record
30	[Play]	Play
31	[Stop]	Stop
32	[REW]	Red Box Left
33	[FF]	Red Box Right
34	[Shift]	Shift

Please refer to Live's documentation for an in-depth explanation of Live commands and navigation.



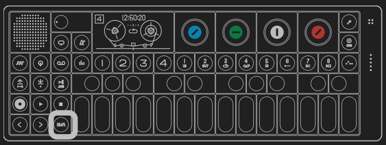
13.9 Controlling Propellerhead Reason



Following Reason 6.0.2 and Reason Essentials 1.0.2, the OP-1 has remote support built into Reason

With the OP-1 plugged and in and in MIDI Mode (Press SHIFT + COM, then press T2), open Reason’s Preferences. Navigate to Control Surfaces, and click Auto-detect Surfaces. Follow the instructions on the screen and close Preferences.

- Transport buttons control Reason’s record and playback functions.
- Keyboard plays notes.
- SHIFT + Arrow keys alter the octave.
- Tap Tempo sets tempo.
- Tape toggles looping on/off.
- Help button toggles metronome on/off.
- Selecting patches is done by using SYNTH and DRUM keys, along with Sound selection keys 1-8
- Generally, the Reason integration with OP-1 operates off five main modes, starting with the Mixer key, which sets to Reason’s default mode, then T1 through T4 (for a total of five modes).
- Each of these Reason modes give different functionality to both Encoders and Sound selection keys.
- SHIFT alters functionality of Encoders and keys depending on the current Reason mode.
- Encoders: Green and White typically control filter cutoff and resonance values. Orange will usually adjust volume, and Blue encoder will mostly control the mod wheel.
- When using a sampling Reason device, the Mic button starts recording of the sample.



14 SHIFT Key

14.1 Using SHIFT

Using SHIFT may not seem like a big thing to explain and dedicate a chapter to, but as it alternates a good portion of the OP-1's keys, it's well worth a look in addition of what has been covered already.

The main reason to bring SHIFT up is its use in changing individual modules in Synthesizer and Drum mode.

14.2 Changing a Single Module

As we talked about in the Synthesizer and Drum chapters, pressing the T1-T4 keys lets you tweak the Engine, Sample kit, Envelope, Effect or LFO.

So let's say you have made settings for a perfect LFO and added a great Effect to that. The only thing that you want to change is the Engine. This is made possible by pressing SHIFT + T1. This command will replace just the Engine, while keeping the rest of the settings for the sound intact (LFO, Effect and Envelope settings which may be active for this particular sound). This can be useful in live settings. When you have a sequence running this command lets you hot swap the Engines of a sound, while keeping the same Effect and LFO. This method may allow for smoother transitions between Engines.

Of course, you still have the option of switching every building block of a particular sound, (including Engine, Envelope, Effects etcetera), by pressing SHIFT + Sound 1-8. This option will present you with the presets in green.

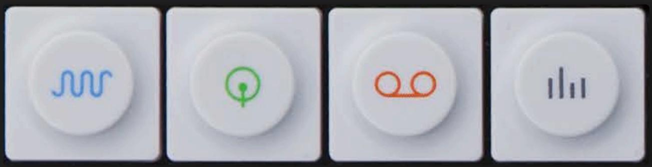
As an example of the difference between changing a complete sound and changing a single module, do take a second in Synthesizer mode to consider the differences between (for example) SHIFT + Sound 1 and SHIFT + T1.

14.3 SHIFT + Main Mode Keys

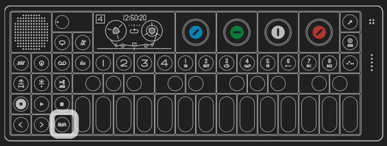
Using SHIFT along with the Synthesizer or Drum mode button will Recall the last saved version of a Synth or Drum sound. This is useful when you feel like improvising or trying out changes to a synth or a drum sound, yet still be able to Recall the sound of the original synth or drum.

Using SHIFT + Tape button lets you clear the recordings on tape. You will have a chance to confirm this before it happens.

Using SHIFT + Mixer button gives you a view of the current signal path.



Recall Sound Recall Sound Erase Tape Signal Path



14.4 SHIFT + Arrow Keys

The Arrow keys functionality can be altered by SHIFT as follows:

Tape stopped :	Bar step back	Bar step Forward
Tape looping:	Move Loop back	Move Loop Fwd
In Synthesizer:	Pitch Bend Down	Pitch Bend Up

14.5 SHIFT + Encoders

In most modes the encoders have double functions. A couple of examples of the alternate encoder functions available with SHIFT include the following:

While in Tape mode, SHIFT+ Green encoder lets you set the starting point of the loop, rather than the ending point which the Green encoder would control without SHIFT being pressed. Also in Tape mode, while holding shift and using the Orange encoder, the Tape volume is adjusted in smaller increments, compared to how the Orange encoder would affect volume without SHIFT pressed.

Similarly, while editing individual hits in the Drum Sampler Engine, getting a more specific In Point and Out Point for a particular drum part, the SHIFT + Green encoder (In Point) along with SHIFT + White encoder (Out Point) can be used for fine tuning. Again, this means having the encoder make more exact changes while SHIFT is being held. In this manner SHIFT + encoder is also used for fine tuning of certain parameters. Looking at the same Drum Sampler Engine view however, the Orange encoder will alternate functions entirely when SHIFT is pressed. Using SHIFT + Orange encoder, you go from controlling play mode for a specific Drum Kit part, to controlling its sound level. Conversely, the orange graphics change from an arrow (indicating the type of play mode), to a number (indicating sound level).

15 LFO Modes

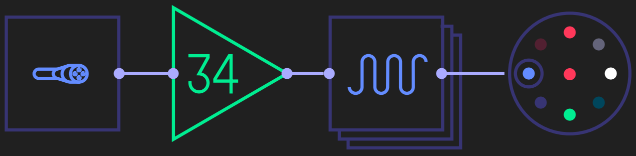
In the most basic understanding of how to use an LFO (Low-frequency oscillator), consider it an impulse to "auto-tweak" your sound. A sound might seem good, but could get even better when you (for example) turn one of the encoders back and forth. With the help of an LFO, the behavior of that same encoder can typically be automated, or in some cases semi-automated. Sometimes the encoder itself won't be spinning, yet you will still hear the changes the LFO produces on your sound. As far as visual feedback goes, a lot of the variations in sound will be viewable on the OP-1's display. To see the effect of some of the LFOs on a particular sound, consider looking at the details of the patch's building blocks, using the T1-T3 buttons. The LFO of a sound, when active, will be found on T4. Please note that a few LFOs rely on some manual turning of the encoder to produce an oscillation. This involves the Crank and Bend LFOs.

Let's start by loading an LFO to a sound, before we look at the specifics of each LFO Mode.

You access the LFO menu when you are on any DRUM or SYNTH sound (1-8), by pressing SHIFT+T4. Use the Blue encoder to highlight your selection. Press T4 to confirm which LFO you want to use for the current sound.

15.1 Element LFO Mode

The Element LFO uses external elements for modulating a sound.



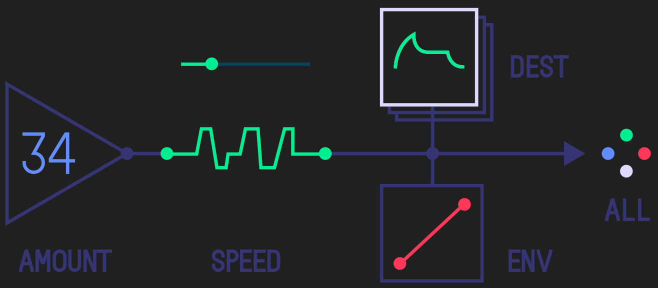
Use the Blue encoder to choose between either the built-in G-Force sensor, or external input like Radio, Line-in or Mic.

If you selected external input, Press SHIFT + Mic key to set the input source.

The Green encoder sets the Amount - this is how much the LFO will affect its target. The Blue encoder sets the destination for the LFO (you can aim it at Engine, Envelope, FX or Pitch & Volume). The Destination is then further defined using the White encoder. Orange encoder gets more specific, as this sets the Destination Parameter. Dimmed colors in the color wheel represent shifted encoders.

15.2 Random LFO Mode

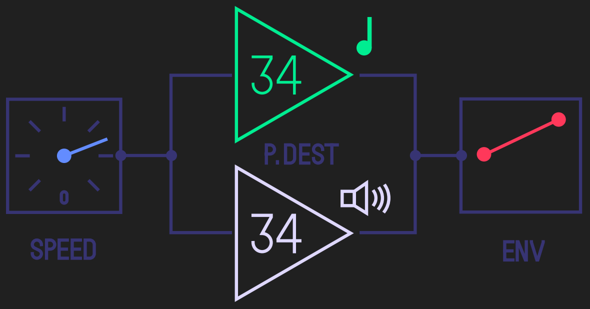
Random LFO modulates ALL parameters in a selected destination. It also have it's own envelope curve to control attack and decay



Blue encoder sets Amount. Green encoder sets speed. White sets Destination and Orange encoder sets the envelope Attack/Decay.

15.3 Tremolo LFO Mode

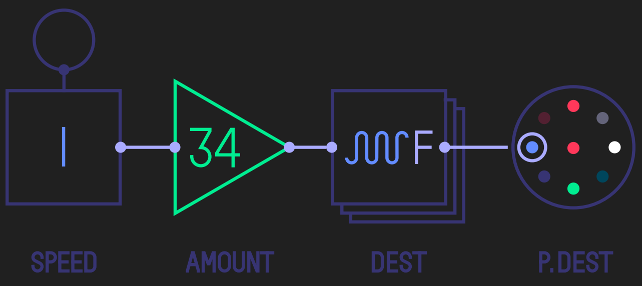
This LFO let you modulate the pitch and the Volume to create tremolo effects.



Blue encoder sets Speed. Green encoder sets Pitch. White encoder sets Volume and Orange encoder sets the envelope Attack/Decay.

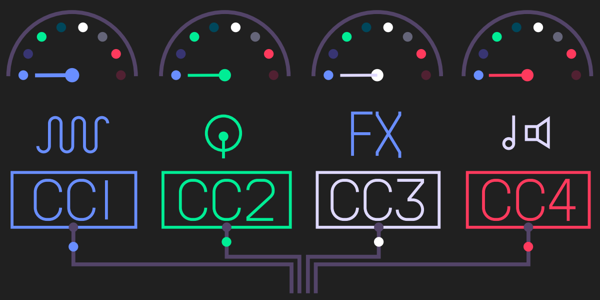
15.4 Value LFO Mode

The Value LFO modulates one single parameter value. Blue encoder controls the speed and Green encoder the Amount. The White encoder sets Destination. Orange encoder sets destination Parameter. Dimmed colors in the color wheel represent shifted encoders.



15.5 MIDI LFO Mode

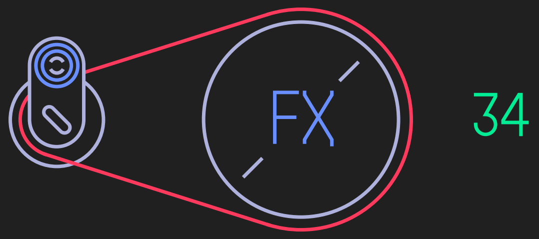
Another type of LFO is the MIDI LFO, which lets you receive external MIDI Control Change (MIDI CC) from other hardware, or from your computer’s music software. In this LFO Mode, the MIDI CC becomes the LFO. Setting up your OP-1 to receive MIDI CC for a particular sound is done by pressing SHIFT + T4 from any SYNTH or DRUM patch.



MIDI CC can be sent from most music software like Ableton Live, Logic, Reason or Pro Tools. Depending on what software you’re using, make sure that you have MIDI playing on your computer, which is routed from the software to the OP-1, connected via USB.

Using the encoders in MIDI LFO, you may route up to four incoming channels of MIDI CC, and target them to your preferred destinations.

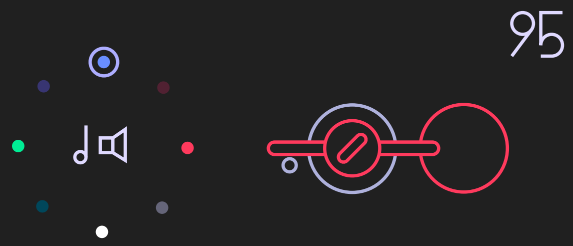
15.6 Crank LFO Mode



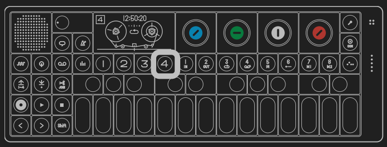
The Crank LFO puts your hands in direct control over the LFO speed, by turning the Blue encoder. The White encoder sets destination, while the Green encoder controls the LFO amount. It should be worth mentioning that Crank mode is also supported in the Sequencers called Endless and Tombola. (Crank accessory sold separately).

15.7 Bend LFO Mode

The Bend LFO offers another take on physical control of the LFO, not unlike the Crank in the way it relies on manual control for oscillating. Orange encoder controls the LFO, White encoder sets the amount. Green and Blue controls destination. (Bend accessory sold separately).

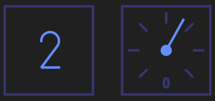


PRO-TIP: Change Bend direction using SHIFT + Orange encoder.



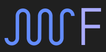
15.8 Additional Symbols Used in LFO Modes

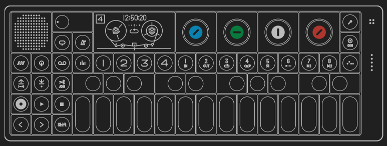
The LFO clock found in the Tremolo and the Value LFO Modes indicate a tempo locked clock with numbers and a free running clock with hand.



15.9 Free LFO

In certain LFOs you'll see the destination symbol followed by the letter "F". This means that the LFO does not retrigger on every note played, when for example a sequencer is running. In this case the LFO is Free. A Free LFO combined with a slow clock allows for long sweeping effects.





16 Exercises

16.1 Recreating sounds

A great way to learn how to model a sound on the OP-1 is to try to create a specific sound from real life. It might be a fat bass sound, a police siren or singing birds. The goal here is not to create a perfect ultra realistic replica, rather to learn how to combine different modules and understand their functions.

16.2 Starting out

Before you do the exercises here, remember to set all modules in the Mixer to clean settings and to turn off any sequencers:

- Set all channels to around 80 and Pan to center (T1)
- Set the EQ to clean by turning the Orange encoder counter clockwise so the arrow points to CLEAN. (T2)
- Toggle any effect to OFF. (T3)
- Set master levels Left/Right to 99 and set Drive and Release to 0.
- Toggle any Sequencer to OFF.
- Enter Synthesizer mode by pressing the Synthesizer Key.

16.3 Helicopter sound

Synthesizer engine: Digital
Envelope: Mid attack and long release
FX: Punch
LFO: Parameter LFO

Start by setting the Master Volume to a comfortable listening level.

1. Select any Sound (from 1-8) and press SHIFT + T1 to enter the Synthesizer engine browser. Select Digital from the list and press any key to exit (except the musical keyboard). The Digital synthesizer engine is simple but very flexible and good for all-round synthesizer sounds.

2. When in Synthesizer engine screen, turn any encoder until you get a noisy sound. To get a clean noise without any tone you need to set the Octave to +4. Do this by pressing > until the Octave pop-up says "Octave +4".

3. Set the Envelope to long attack by turning the Blue encoder until you get a sloped curve. Turn the Orange encoder counter clockwise to get a mid- to long release. Set both the Green and the White encoder to maximum by turning them clockwise.

4. Enter the Effect screen by pressing the T3 key. Now set the effect to Punch by entering the Effect Browser (SHIFT + T3) and choose Punch from the list. Press any key to exit.

5. The Punch Effect is great for adding punch to drums and final mixes, but also as a multi purpose resonance filter as used here. Set the Punch effect like this: Blue parameter to middle, Green to around 50-65, White to 24 and Orange to 99.

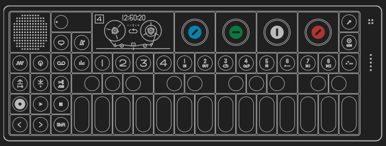
6. Now play a note on the musical keyboard and turn the Blue encoder simultaneously. You will now hear the noise going through the filter and when you turn the Blue encoder clockwise you open up the filter and let the sound through. The next step is to control the Blue parameter (equals to the Blue encoder) and make it automatically increase and decrease at a certain speed. This is done with the Parameter LFO.

7. Press T4 to enter the LFO screen and the Press SHIFT + T4 to enter the LFO browser and select Value from the list. Press any key to exit.

8. The Value LFO is made to modulate one parameter value only. To control the Blue Parameter in the Punch effect set Speed to mid (12 o'clock), Amount to 50-100, Destination to FX and Parameter to Blue.

9. Now play the musical keyboard and you should hear a helicopter type of sound.

If you now go back to the Effect screen you will actually see that the blue parameter is moving up and down. Try to turn the Blue encoder as you play a note and you will be able to set the range for the blue parameter to act within.



16.4 Singing Birds sound

Synthesizer Engine: FM
Envelope: Short attack, short decay, low sustain and long release
Play Mode: Mono, Portamento: 60
FX: Spring
Sequencer: Tombola

To create a sound like singing birds, start with the FM engine which is good for metallic and distinct sounds but also clean sinus wave sounds when the FM level is turned down. Here we also use the Tombola to play the notes in a natural and random way and add some portamento to let the notes glide. Sometimes using a sequencer as tool for shaping a sound can be very useful.

1. Select any sound from 1-8 and change it's engine to FM.

2. Turn the Blue encoder counter clockwise until you get a clean sinus wave sound.

3. Set the Octave to +3 (use arrow keys)
4. Set the Envelope to very short ATTACK, short DECAY, low SUSTAIN and mid RELEASE.

5. By pressing SHIFT in Envelope screen you enter the Play mode settings. Set PLAY MODE to MONO and PORTAMENTO to 60.

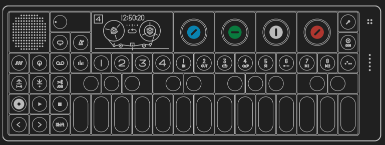
6. Choose the Spring effect and set the TONE to bright (white color), mid amount of TURNS, maximum DAMP and mid LEVEL.

7. Choose the TREMOLO LFO and set the SPEED to 9 o'clock, PITCH to 20-30, VOLUME to 20-50 and ENVELOPE to straight.

8. Now press SHIFT + Sequencer key and select TOMBOLA. Press any key to exit.

9. Drop some notes into the Tombola and set the speed to 2.

As mentioned earlier, using a sequencer as one of the key elements can be very useful when creating melodic type of effects.

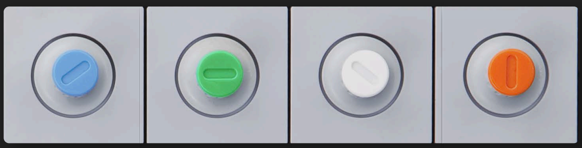


17 Reference

17.1 Synth engines

Cluster

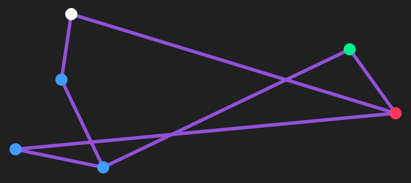
TYPE	Multi Layered Oscillator Cluster

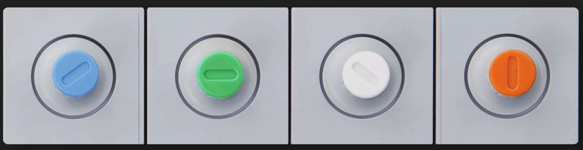


Number of waves (0-6)	Wave Envelope	Spread	Unitor

Digital

TYPE	True Digital Synthesis

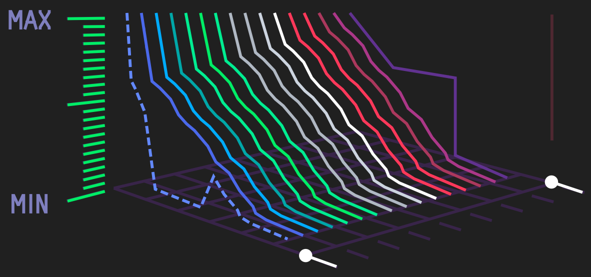


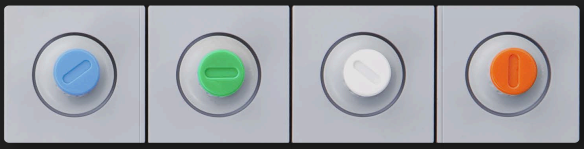


Wave Shaper	Octave	Detune and Ring Mod. On/Off	Digitalness

String

TYPE	Waveguide String Model

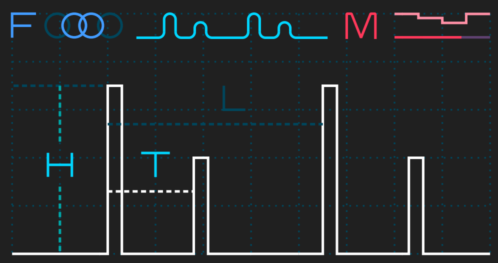


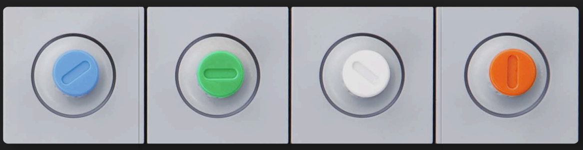


Tension	Impulse Decay	Detune	Impulse Type

Pulse

TYPE	Dual Pulsetrain Oscillator

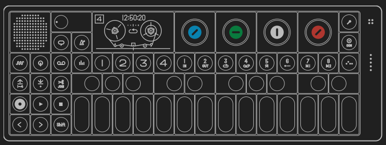




Filter	Amplitude	Second Pulse	Modulation

OP-1

PORTABLE SYNTHESIZER
SYNTHÉTISEUR PORTABLE
TASCHEN-SYNTHESIZER
小型シンセサイザー

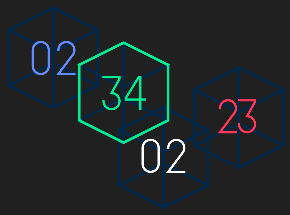


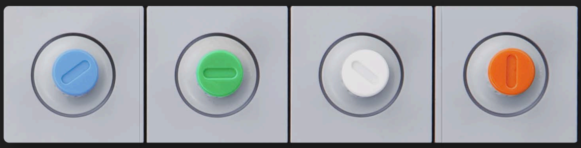
Reference

Synth Engines
(Continued)

FM

TYPE	Four Operator FM Synthesis

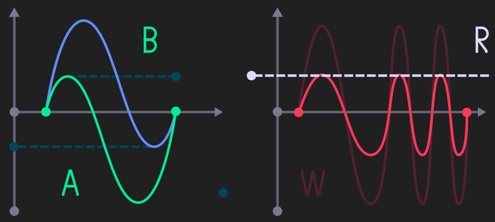


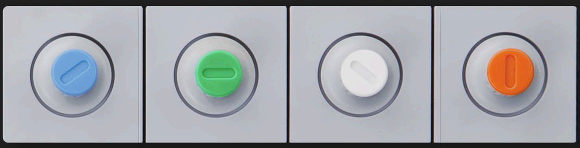


Topology	Freq.	FM Amount	Detune

Phase

TYPE	Phase Distortion

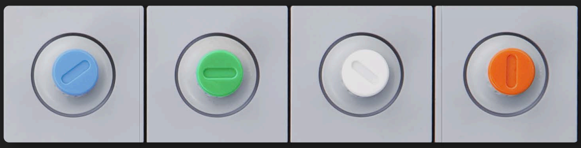




Phase Shift	Distortion Amount	Phase Filter	Phase Tilt

Dr Wave

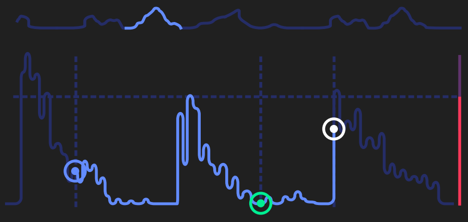
TYPE	Frequency Domain Synthesis

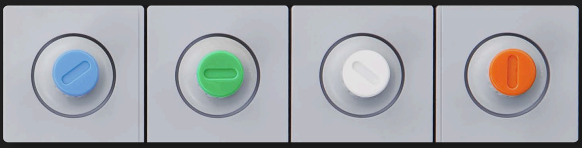


Wave Type & Length	Filter	Phase	Chorus

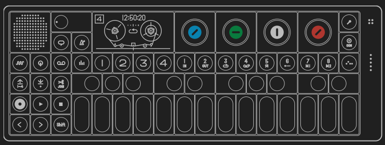
Synthesizer Sampler engine

TYPE	Teenage Sample Player



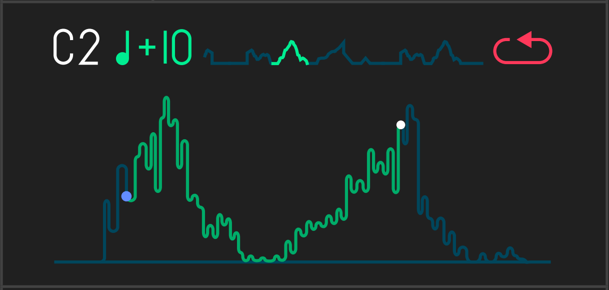


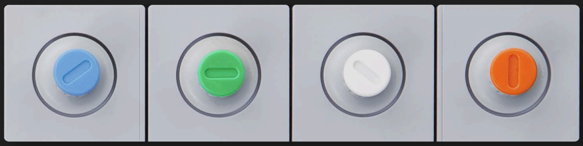
Start	Loop In	Loop Out	End
Reverse On/Off	Loop In Fine tune	Loop Out Fine tune	Gain



Drum Sampler engine

TYPE	Teenage Percussion Sample Player

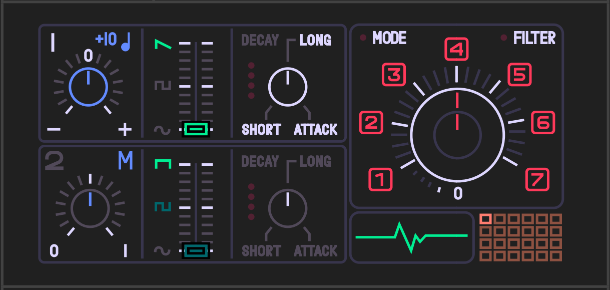


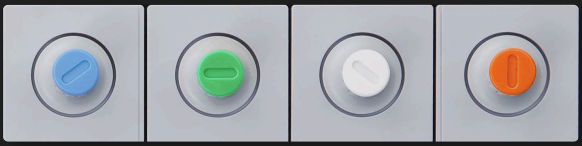


Note / Pitch	In	Out	Loop Off / Once / On
Reverse On / Off	In Fine tune	Out Fine tune	Gain

Drum Sampler engine

TYPE	Teenage Percussion Sample Player


1
+10
0
−
+
DECAY
LONG
SHORT
ATTACK
2
M
0
1
DECAY
LONG
SHORT
ATTACK
MODE
FILTER
4
3
5
2
6
1
7
0



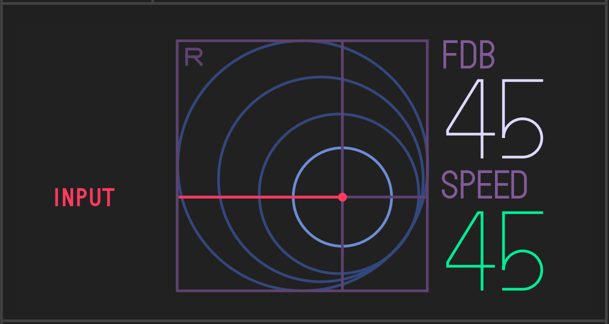
Pitch	Waveform	Envelope	Cross Modulation
Pitch	Waveform	Envelope	Filter Cutoff Frequency

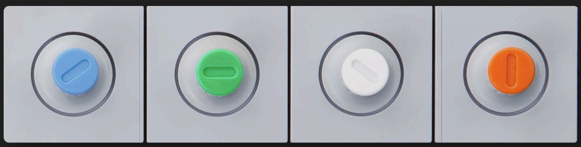
PRO-TIP: To copy a sample position across the keyboard in Drum mode, just hold the key you want to copy from and press LIFT, then hold the key you want to copy to and press DROP. This is good for re-arranging your drum kits or creating tonal keys.

17.2 Effects Reference

Delay

TYPE	Solid State Delay

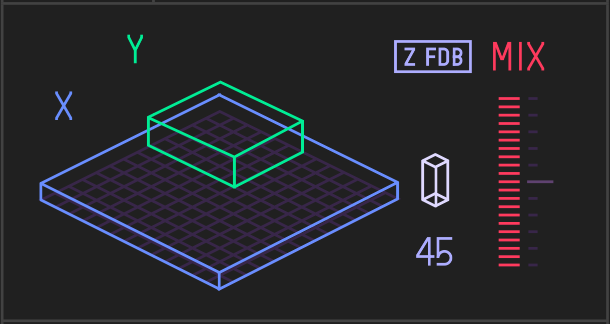

R
FDB
45
SPEED
45
INPUT

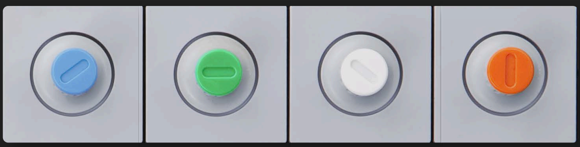


Size	Speed	Feedback	Mix

Grid

TYPE	Three Dimensional Feedback Plate

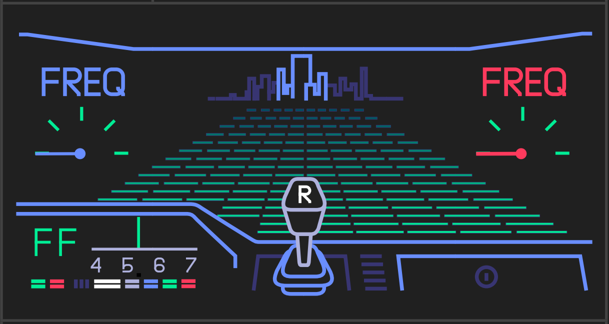

Y
X
Z FDB
MIX
45

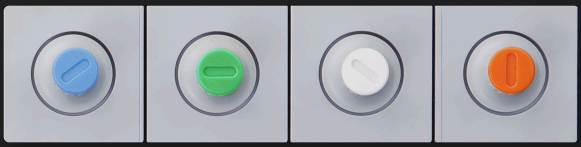


X Size	Y Size	Z Feedback	Mix

Nitro

TYPE	Dual Resonant Turbo Filter

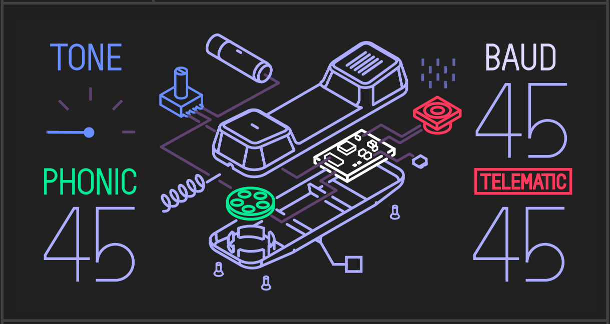

FREQ
FREQ
R
FF
4 5 6 7

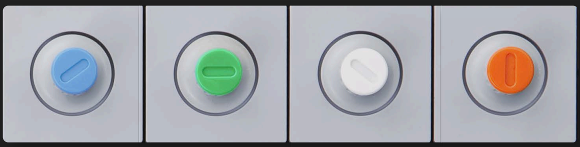


Frequency	Filter Frequency Follow	Resonance	Frequency

Phone

TYPE	Hacked Telephone System

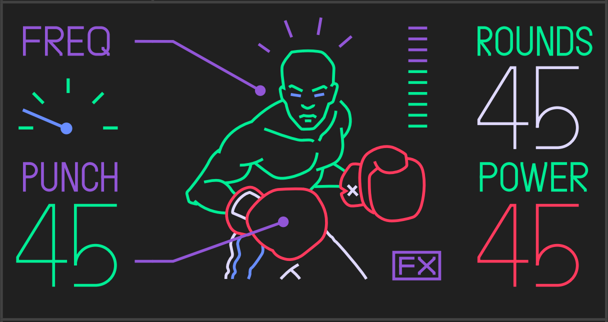

TONE
PHONIC
45
BAUD
45
TELEMATIC
45

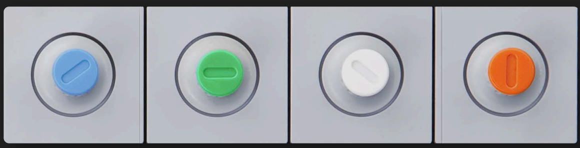


Tone	Phonic	Baud	Telematic

Punch

TYPE	Hard Hitting Low Pass Filter

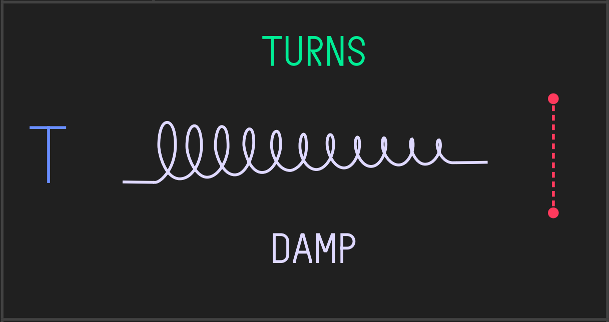

FREQ
PUNCH
45
ROUNDS
45
POWER
45
FX

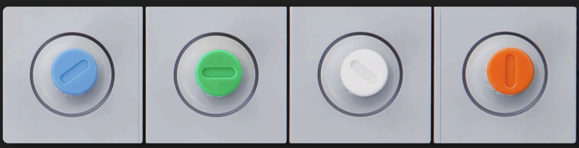


Frequency	Punch	Rounds	Power

Spring

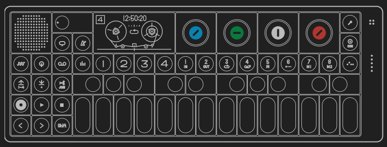
TYPE	Mathematic Reverb


TURNS
T
DAMP



Tone	Turns	Damping	Send

PRO-TIP: Press and hold SHIFT while turning encoders for fine tuning of effects parameters.



18 Hardware

CPU

- 400 MHz Processor Core (800 MMACS performance)
- 64 MB Low-Power SDRAM (12ns)
- 512 MB NAND Flash storage
- 24-bit 96kHz ADC/DAC

Battery

- Li-Ion 1800 mAh
- 16 hours active Battery Life
- 2 Years stand-by time
- Charge via USB port

I/O

- USB 2.0 high speed (OTG)
- 3.5 mm Line Input, Output
- Built-in microphone
- High output mini speaker 8 Ohm 1 Watt
- 3-axis accelerometer (G-force) sensor
- Worldwide FM band support (64-108 MHz)

Display

- AMOLED display running at 60 fps
- 320 x 160 pixel resolution
- Color Depth: 16.7 M
- Contrast: 10000:1 (good for outdoor use)
- Viewing Angle: 170°
- Life Time: 30,000 h
- 1800 mAh li-ion Polymer Battery

Mechanical

- Low profile keyboard module
- Scissor-switch ultra low profile design
- Expected lifespan of 10 million keystrokes per key

Encoders

- Industrial Grade Incremental Encoders
- Rotational life: Up to 1,000,000 revolutions
- Excellent indexing feel (remains consistent over life)
- Zinc die cast and fiber enforced high performance plastic
- Used in Avionics Operating temperature range: -40 to +85°C2.8

Body

- Advanced CNC:d one-piece Aluminum design.
- 2 X M6 Mounting holes for accessories.
- 2 X Cuts for strap accessory.

Color

- Light grey powder coated body and EDM textured keyboard

Dimensions

- L 282 mm
- H 102 mm
- D 13.5 mm

Packaging

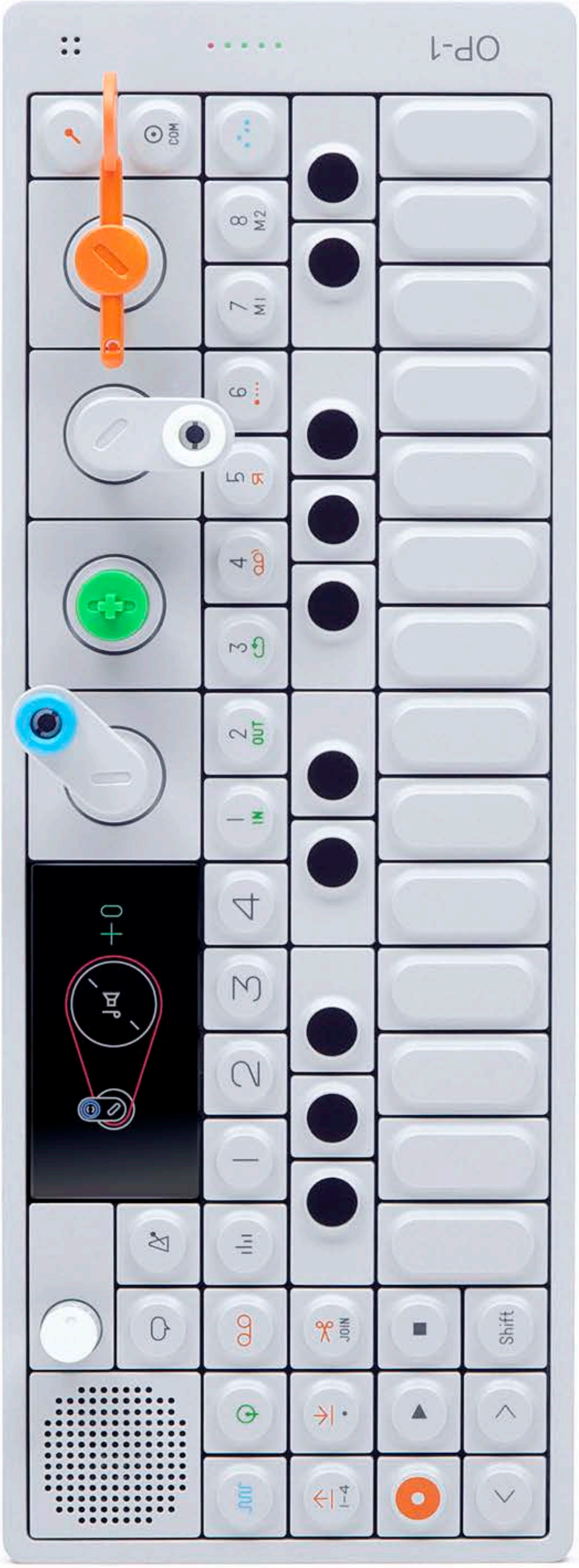
- Paperfoam material
- Environmentally friendly

Motion Sensor

- 3 Axis Motion sensor (G-Force)
- Assignable to any synth, envelope, effect parameter or to pitch

OP-1 with optional Studio System rig.

OP-1 with optional accessories.


OP-1
COM
8 M2
7 M1
6
5
4
3
2 OUT
1 IN
4
3
2
1
JOIN
Shift
1-4

teenage engineering