Polyend Tracker Manual
V.0.8

Intro

Quick start

To **update** your unit's **firmware**, copy the firmware file to the "Firmware" folder on your micro SD card > go to Config > Firmware > chose the right file and confirm using the screen key.

- **Loading Samples** > go to Sample Loader module, find samples on your SD card (left side), and copy them to the Instruments (right side)
- **Volume** > Master + Jog-wheel
- **Tempo** > Song + Jog-wheel
- **Select track** > Shift + Up arrow (being on the top of the sequence)
- **Select all** > Shift + Up arrow + Up arrow (if on top)
- **Go to the top of the pattern** > Shift + Insert (Home)
- **Switching pattern views** > hold Pattern and press one or two of the colour buttons
- **OFF/Fade/Cut step** > turn the Jog-wheel all the way left
- **Copy/Paste Pattern** > press Copy, then go to new Pattern and hold Pattern and press Shift + Copy (Paste)
- **Play Pattern** > Press Play
- **Play Song** > Shift + Play
- **Record Pattren** > Rec + Play
- **Record Song** > Shift + Rec + Play
- **Changing (transposing) many parameters at once** > select steps, choose the parameter (Note/ Instrument/FX1/FX2) you want to change, hold Shift and use the Jog-wheel
- Polyend Tracker runs on 5V/1A and **can be powered from a power bank**.

Important information about file system:
- Correct files system for micro SD card is MS-DOS Fat32,
- Folders are limited to show maximum 100 files

The interface

The Polyend Tracker's user interface is divided into several sections:

A. The screen - a centre point of the instrument which display all the functions and operations real-time.
B. Screen keys - mechanical controls which always correspond to what's displayed on the screen directly above them.
C. The grid - multifunctional silicone pads, can serve for your instrument's keyboard, data entering, and many more.
D. function keys - group of quick-access function keys which give you control over all the Tracker's functions and options.
E. navigation keys & jog-wheel - dedicated controls, transport, arrow keys for navigation, insert, copy/paste, delete/backspace and Shift function keys etc.
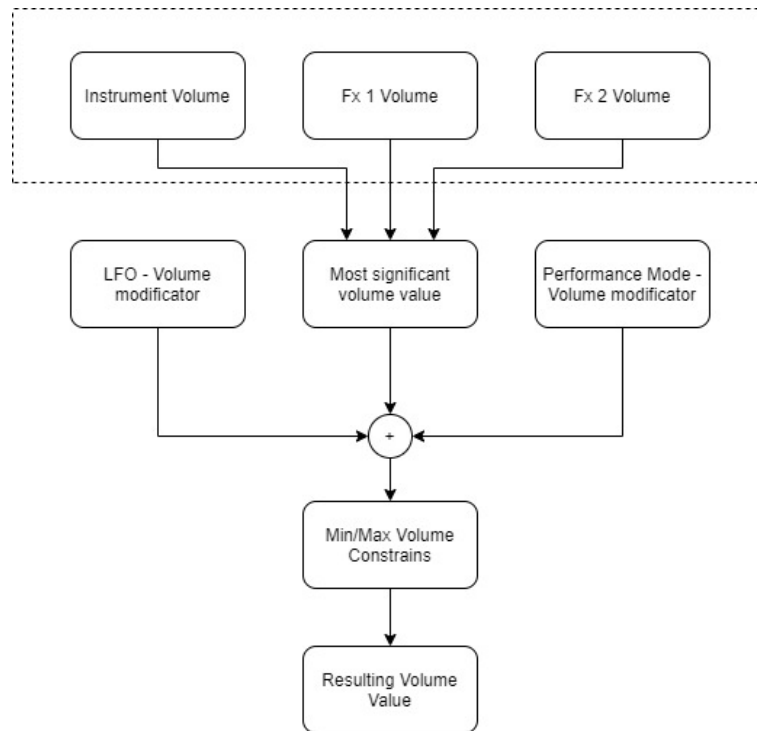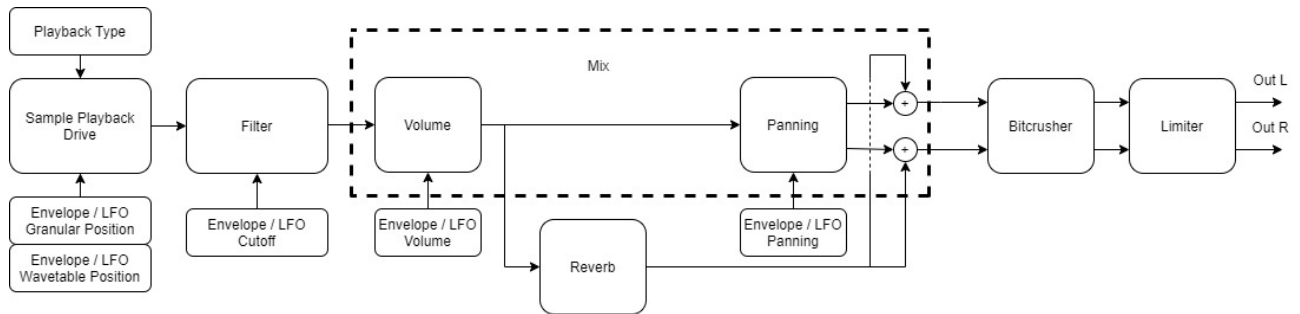
The back panel

1. Out
2. Line In
3. Mic
4. MIDI Out
5. MIDI In
6. MicroSD card slot
7. Reset button
8. USB C
9. Power button

Description to do

The Architecture

The controls

One of the first things you will notice in the Tracker is that you can use different control types to navigate and operate the instrument at the same time.

Most of the data input in the Tracker is being done by the use of the silicone **grid pads**, the **jog-wheel**, the dedicated mechanical **control keys** and the **screen keys**.

The grid pads can serve as a classic keyboard (with and without scale filters), the pads can also hold an instrument per pad in certain situations and are useful to enter the preprogrammed values - where the first pad is always 0%, and the last one is 100%.

In most of the occasions, these controllers can be used interchangeably - e.g. volume Fx1 value can be precisely entered using the jog-wheel and scrolling for the desired value or by a single press of the pad with the exact value. Using this should increase your workflow.

Important:

- Shortcuts - while most of the Polyend Tracker functionalities are rather self-explanatory (just look at the scheme and key names), there are some tricks and shortcuts implemented to speed up the composing process which might not be so obvious at first glance. Most sections are using their shortcuts. It's good to master them to compose your music in a fast and easy manner.
- Shortcuts colligated to the chosen section are mentioned in these particular sections, but few are worth mentioning here at the beginning:
  - **Master key + jog-wheel** > Master volume control,
  - **Song key + jog-wheel** > Song Tempo control,
  - **Insert key** > always work as the onscreen enter key corresponding to the selected screen key,
  - **Delete/Backspace key** > always work as the onscreen delete key corresponding to the selected screen key.
  - **Copy/Paste Pattern** > press Copy, then go to new Pattern and hold Pattern and press Shift + Copy (Paste)

Loading & saving projects

Use the **File** key to access all the operations performed on your **project** files.
- **Open** > use controls to navigate to your projects folder to display your song file names. Press enter on the song name which you want to load,
- **New project** > create a new project,
- **Save** > save your project (important - the project you're currently working at is being autosaved in a realtime),
- **Save as** > save another instance of your project.
- **Export** (export song, song stems, chosen pattern, chosen pattern stems, export to MOD).

Important:
- When you have your project named and ready, or even while working on the default "blank" project - everything you do is being automatically saved. You don't need to remember about it all the time. You should be able to recover your work even when you accidentally turn the Tracker off.

Prepare your sounds

Sample Loader key takes you to the micro SD card browser. Here you can preview samples and create your instruments which you'll be later using to create patterns and songs.

1. Create your instruments by loading the samples to the Tracker's memory from the micro SD card (2 minutes of sampling time per project). Simply copy a sample from the browser on the left side of the screen to its right side. These are your instruments with their instruments number and name.
2. Tweak the instruments up to your needs using the **Instrument Parameters** and **Sample playback** (here you can use the classic sampler or the sample-based **wavetable** and **granular** synthesisers - more information in the sections below).

Important:
- Press and hold the yellow Instrument key to pop up an instrument browser window,
- You can create a maximum of 48 instruments,
- Replace an existing instrument by loading another sample to its position (all other properties of the instrument remains the same),
- Shortcuts:
  - **Left arrow** in the left browser > takes you to the very top of the browsed folder,
  - Use **Shift + arrows** > for batch selection,
  - Use the **Insert** key as Enter.

Instrument Parameters

The **Instrument Parameters** key gives you access to two screens (marked in the upper left corner of the screen 1/2 and 2/2). On the first screen, you can set Volume, Panning, Tune, Microtune, Filter type, Cutoff, Resonance and the amount of Reverb Send. On the second, you can set instrument automation by using two options:

- Envelope (with Attack, Decay, Sustain, Release and Amount),
- LFO (Destination, Shape, Speed/Rate, Amount).

The automation can be targeted to the following destinations:

- Volume,
- Panning,
- Filter Cutoff,
- Wavetable Position
- Granular Position

Note: The LFO speed is synced with the Project Tempo.

The Pattern Editor

A. Pattern - choose the pattern you're working on from 1 to 255,
B. Length - set the length of the current pattern (each pattern can have different length),
C. Step - set the interval for entering the steps one by one,
D. Fill - a sophisticated tool which allows you to enter multiple steps with different values with just one click,
E. Preview - previews the selected step when the sequencer is stopped.
F. Undo -

Use the **Pattern** key to start sequencing your instruments. This is the Tracker's main screen - the one you'll be spending most time working with and probably the most important one - the sequencer with the classic tracker vertical layout. Here, you create your project's patterns. You can store up to 255 of them per project. Each pattern consists of 8 tracks which can be from 1 to 128 steps long.

Important:

- To start sequencing the steps, activate the **Edit mode** by pressing the red **Rec** key - the onscreen selector turns red. No changes are made without turning the Edit mode on,
- Change of a pattern in the Pattern mode (sequencer view) - happens immediately. The new pattern starts playing from the position where the previous pattern left off. If you want to change the patterns sequentially with the end of its phrase - use the Performance mode.
- Every change made in the Pattern editor is being autosaved automatically, but you can use the onscreen **Undo** and **Redo** (Shift + undo) function.
- Shortcuts:
  - **Shift + Insert (Home)** > jumps to the first step of a track sequence,
  - **Shift + Up arrow** (when on the first step of a sequence) > selects all the steps in the track,
  - **Shift + Up arrow + Up arrow** (when on the first step of a sequence) > selects all the steps in all the 8 track sequences,
  - **Shift + arrows** > marks more the one step
  - **Pattern** key **+ Paste** (Shift + Copy) > copies the entire pattern with all its 8 tracks and length,
  - **Pattern** key **+ Up/Down arrow** > switches the pattern you're currently working at.
  - **Copy/Paste Pattern > press Copy, then go to new Pattern and hold Pattern and press Shift + Copy (Paste)**

The step

What are these numbers all about. Let's take a look at the example.

A step is a **Note,** an **Instrument** number and two Fx's. These four = coloured values are corresponding to the **Coloured Function** keys located on the right side next to the display. Use them to toggle between step properties.

- **C5** (turquoise) > Note and octave or note-off (OFF/CUT/FAD)
- **05** (yellow) > Instrument number
- **Fx1** (purple) > a letter or a symbol indicating the type of used effect and the number right representing its value,
- **Fx2** (blue) > the same as in Fx1.

Important:

- Step length is a distance between a note and next note or "note off" (shown as OFF in the pattern).
- To enter a note-off value (OFF) turn the jog-wheel all the way to the left,
- When note hits the note-off (OFF) Envelope Release is being run,
- You can also use CUT (cuts the sound immediately)and FAD (gently fades the sound),
- Polyend tracker allows you to work on 8 tracks at the same time. While the four positions of a step: Note/Instrument/Fx1/Fx2 are visible - only four tracks fit on the screen. You can narrow the columns of the steps using the following shortcuts:
  o **Pattern** key **+ Note** key**,**
  o **Pattern** key **+ Instrument** key**,**
  o **Pattern** key **+ Fx1** key**,**
  o **Pattern** key **+ Fx2** key**.**

Any two of colour keys combined narrows their display to the needed values - this way you'll be able to see all the 8 tracks on the screen at once.

- Press and hold any of the coloured keys to pop up a browser window for the selected step.

Editing pattern

Start a new project > choose your instruments > turn on **Edit mode** (press **Rec** key - you'll see the red frame around the selected step) > use the arrow keys to navigate > input some notes and other values using the grid pads or the jog-wheel.

To transpose multiple values, select the range with the **Shift** key and keep it pressed it while turning the jog-wheel. It prevents accidental changes when having many steps selected.

Entering a Note inserts the number of the chosen Instrument and vice versa - entering an Instrument number inputs a default Note value. When you have these ready on the desired step - you may like to add one or two Fx's with their values.

Polyend Tracker is offering two compelling tools. **Fill** and **Step** are crucial to master to get a quick musical output without spending too much time.

The Step allows you to set the interval for the incremental step values input, (e.g. you can enter your kick every 4 bars without scrolling to the exact step). Just set the interval and use the pads to enter data in the exactly needed spots without a need of scrolling or navigating to them.

Fill is a sophisticated tool which allows you to enter multiple steps to a selected area. Depending on the mode (Fill Notes/Fill Instruments/Fill Fx), there is a variety of settings to choose from:
- Where? - Indicates where to insert a note/instrument/fx:
  - Note - finds all notes in the selection (when filling notes, it replaces it with the new notes),
  - No Note - finds all steps where there are no notes,
  - Fx - finds all steps with Fx
  - No Fx - finds all steps where there is now Fx
  - Random - randomly finds a place to fill
  - Each 1-32 - evenly fills steps with the chosen interval in the selection.
- Scale (only in Fill Note) - selects the notes only within a chosen scale.
- Fx Type (only in Fill Fx) - pick one of the Fx to be filled or use Random Fx option which randomly selects Fx type for you. Note: Random Fx Type does not fill Tempo Fx.
- Fill type:
  - Constant - fills the same chosen value for the selected steps,
  - From-To - fills in the selected area, evenly distributing the values within the chosen range,
  - Random - randomly chooses the values within the selected range.

Important:
- Change the currently edited step properties by toggling between the Colored Function keys.
- To edit selection value enter the **Edit mode** (press **Rec** key) > select the desired step properties > use **Shift + jog-wheel** or the **grid pads** to enter the values.

- To **delete an entire step** > delete the Note or the Instrument number.
- You can delete the step's Fx values separately. Deleting an Fx value itself won't erase the entire step, just the selected Fx.
- You can paste the selected value only (i.e. Fx) by holding a colored key and pressing paste (Shift + copy).

Real-time pattern recording

To start live-recording the pattern, hold **Rec** and press **Play** key. Now you can add values live using the grid pads as you'd be playing a keyboard. After your sequences are recorded - you can start editing them as mentioned in the previous section.

There are three different modes of live recording in the Tracker's sequencer. To switch between these modes use the colored Note/Instrument/Fx buttons. You can record in the following modes:

- Notes - where the "note off" action will be also recorded. Useful to record chords and melodies.
- Instruments - where the "note off" action is not recorded. Appropriate to record drum beats.
- Fx - where the "note off" communicates is not recorded either.

Important:

- You can choose what parameter (Note/Instrument/Fx) you'd like to record.
- When recording notes, micro-timing is also being recorded as one of the Fx. To quantise your recording, simply delete all the "m" Fx's.
- Polyend Tracker offers **8 monophonic** tracks. That means if you play a triad chord while live recording - it consumes three of its eight tracks.
- You can live-record pattern or the song. To record a song hold **Shift** + **Rec** and press **Play** key.
- Live recording starts with the track that is currently being edited.
- It the track you are recording is occupied with a value the system changes the track to the next one to the right.

Sample Playback

Sample Playback key gives you access to all the classic sample-based playback options plus loop slicer. We also added the Granular and Wavetable synthesis instruments. Here are all the available options:

- 1-shot (preview, set start point, set endpoint, zoom),
- Forward/Backward/Pingpong Loop (preview, set start point, set loop start, set loop end, set endpoint, zoom).
- Slice - here you can slice your sample manually adding and adjusting slice points, or you the auto slicing function which automatically detects dynamic amplitude changes and slices accordingly. The number of the slice can be accessed via pattern Slice Fx.
- Wavetable - using this play mode you can make a Wavetable synthesizer using any sample. To get a classic WT results though, use specially prepared WAV files that give smooth transition when changing its position. There are several Wavetable sample standards, that is why you can adjust the Window parameter indicating the length of the frame and use any kind. Note: You can use many free Wavetable samples for most of the recent synthesizers (e.g. Xfer Records Serum and Arturia Pigments uses 2048 window, Ableton Live uses 1024 window).
- Granular - this is a particular approach to granular synthesis where each voice has one grain. You can set grain's position, length and shape. You can also set a direction of playback loop (Forward, Backward, Pingpong).

Sampling - Audio Recording

1. Open the **Sample Recorder** section > select the sampling source (line input, FM radio, microphone input) > set the recording gain and toggle the monitoring on > use the onscreen **Record** key to start recording > press stop when ready.
2. Now when your sample is recorded, you can trim its start and endpoints, crop it, save it to the SD card or directly to the project as an instrument. While saving, you can name your sample manually or use the auto-naming function.
3. Tweak your recorded sample using the **Sample playback** and **Sample editor** sections.

Song mode - Arranging Patterns

Making a pattern or a few of them is usually quick and fun. But how to turn them into a fully composed and arranged piece? The Tracker's **Song mode** would be the answer. A song is an arrangement of patterns in the desired order of playback.

Song mode offers a simple way to set a pattern number per row. Use the arrow keys and the jog-wheel to set the sequences of your patterns to create songs.

A row always contains eight slots which represent eight tracks. Filled slot/clip means there's a sequence on this particular track. Empty slot means the track does not contain any steps sequenced.

Important:

- Song mode is where you can set the current project's **tempo in BPM.**
- While the song mode is playing back the rows of pattern's tracks, you can toggle between the Song mode and the Pattern modes.
- Using the onscreen commands + screen keys you can add and delete song's rows and copy/paste the pattern's tracks. Using these functions, you can move the selected pattern's track 1 to track 2, etc.
- **Play** > plays the selected row in a loop.
- **Shift + Play** > plays a song.

Performance mode

While the classic trackers were mostly about composing your music, the Polyend Tracker also allows you to perform with it. Press **Perform** key to enter this powerful live creation tool.

The punch-in effects

Performance mode gives you access to many configurable effects at the same time. There are 12 effects slots which give you the option to choose the FX set that suits your creative process.

Effects can be triggered in real-time using the grid. For each of the chosen effect, you have four values: default (---) and 3 chosen by you.
Those three values are the presets that can be easily turned on by pressing the corresponding grid pad.

The punch-in effects are applied only on the chosen track. Use the 8 screen keys to indicate which tracks you want to affect (a red border indicates the selected tracks).

Important:

- The effects are applied in correspondence to the pattern or instrument parameters values. When the volume effect value is 10, it means that when it's on, it will **add** 10 to the value of Volume set in instrument parameters or to the value set in the pattern.
- You can customise your Performance effects when being in **Edit mode** (press **Rec** key). Navigate with the left/right arrow keys and chose the type of effect using the up/down arrow keys and. You can also switch effects places by holding Shift and pressing arrow keys.
- When switching from the Performance to the Pattern mode, the sequence keeps on playing, but the Performance effects will get back to the defaults.
- When switching to the Performance mode, by default all the tracks are off (this prevents unexpected things to happen when playing live).

Pattern tracks remixing

Performance mode is also a convenient and powerful tool to make breakdowns, add live on-the-fly changes to your music, or even remix your entire tracks.

On the bottom of the Performance mode screen, you can find 8 buttons indicating the pattern number for each track. Selecting the corresponding screen key applies the chosen punch-in effects to this particular track. But there's one more function here which allows you to mix selected track from any of the previously created patterns.

To switch the track's pattern, you have to be out of the Edit mode, then hold the desired screen key and use up/down arrow keys.

Important:

- You can organise your effects by moving them left and right using the **Shift + arrows** shortcut when in **Edit mode** (press Rec key).
- Changing pattern's tracks in Performance mode is sequential -changes patterns after the currently playing pattern phrase reaches its end.
- You can change more than one pattern's tracks at the same time, just hold more than one screen keys and use the up/down arrow or the jog-wheel.
- All the changes made to your pattern sound in the Performance mode are discharged when you will leave this mode by exiting it.

Audio Rendering

Polyend Tracker offers the functionality of rendering audio files directly to the micro SD card. You can choose if you want to render your patterns, tracks or entire songs into separate audio stems or master tracks. It's all plug and play, no additional software or drivers are needed.
Go to **File** > **Export** > and choose what exactly you want to render to audio file (Song, Song stems, Pattern, Pattern stems). While rendering steams the Tacker exports 8 mono track files, 1 reverb send mono track and the mix stereo track.

Config

Under the **Config** key**,** you can find all the Tracker's configuration options including:

- **General** > pattern divider, radio region, brightness.
- **Firmware** > load the new firmware.
- **MIDI** > all the necessary MIDI I/O implementation controls.

To **update your unit's firmware,** copy the firmware file to the "Firmware" folder on your micro SD card > go to Config > Firmware > chose the right file and confirm using the screen key.

Sample Editor (to do)