Polyend

Polyend Tracker+ Manual

An Official Reference for The Polyend Tracker+

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1

Overview

The Polyend Tracker+ is a modern hardware implementation of a classic software music application and is the next generation of Polyend Tracker with **upgraded hardware and extended feature set**. Trackers emerged in the late 80's as music making tools mainly on gaming machines and in the 90's Trackers also became popular on personal computers. A Tracker is a utility that assembles a linear series of notes that typically triggers samples and associated parameters. Unlike standard digital audio workstations (DAW's), Trackers generally run top to bottom when playing tracks. Don't be fooled by this quirky programming style of music making which may appear unusual, but does provide a very powerful and creative approach to production. Polyend Tracker+ presents this vintage application in a modern and stylish box with **16 sequenced tracks** and a variety of synth and sample instruments, MIDI, effects and audio inputs and outputs contained within multiple workflow environments. The feature set is wide with some interestingly creative and unexpected elements such as retro games and a radio receiver. Tracker+ brings more power and more features contained within a familiar form factor and user interface. Tracker+ includes a **stereo audio pathway** including **stereo sampling with extended sample time.** In addition the ability to interface with other gear using **audio over USB** covers multiple tracks. Tracker+ introduces a collection of **synthesizer instrument models** alongside sample based instruments all of which support it's portability and position as an 'all in one' workstation. This guide aims to help with the speed up of learning and also to get the very best from the device. The Tracker+ journey at first glance may appear unusual. Tracker+ is fun and at the same time a powerful, professional music making unit giving rewarding results. Enjoy.

1 Overview

1.1 How to Use This Notebook

NOTES

This book combines a formal reference alongside your own notes and comments, collectively bringing together a comprehensive guide to Tracker.

Sections are laid out to cover the full workflow with walkthroughs, step by step guides and tips. Some pages carry a wide margin and some are intentionally blank enabling you to make your own notes.

Your Notes Can be written here Here

Control conventions.

(Jog)

Rounded parentheses represent the large single rotary control jog wheel. Selected functions can be navigated or changed depending on the context. Use [Shift] + Turn (Jog) to adjust selected values in larger increments.

[Function]

Square parentheses contain functions that are selectable by a physically dedicated button - either as a primary or secondary function. Examples are [Rec], [Play]. The arrow symbol buttons will be represented by [Left], [Right], [Up], [Down] text.

[Function] + [Option]

Functions which require multiple button selections simultaneously are shown with a + symbol between each required button. An example is the [Shift] + [Copy/Paste] command.

[PAD]

Each of the 48 pad buttons will be simply represented by [PAD]. These functions will depend on the mode and function selected.

[*Dynamic Screen Key*]

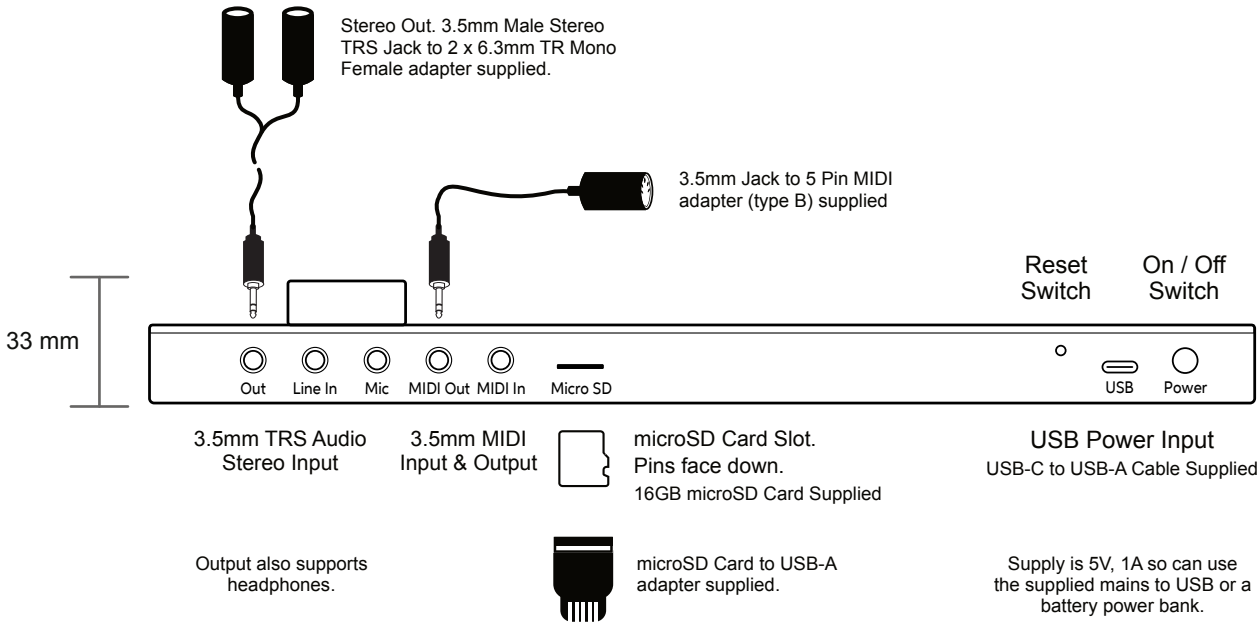
The 8 dynamic screen buttons located under the display will be written in this book using *italic* text. The actual function that each button serves will change depending on the current context. The function it serves will be labelled on the screen above each button on the device. Currently unavailable options will show on the tracker screen as dimmed text. An example is [*Create Project*]. Some options will be underlines green or red. Red underlined options need to be in edit mode to access.

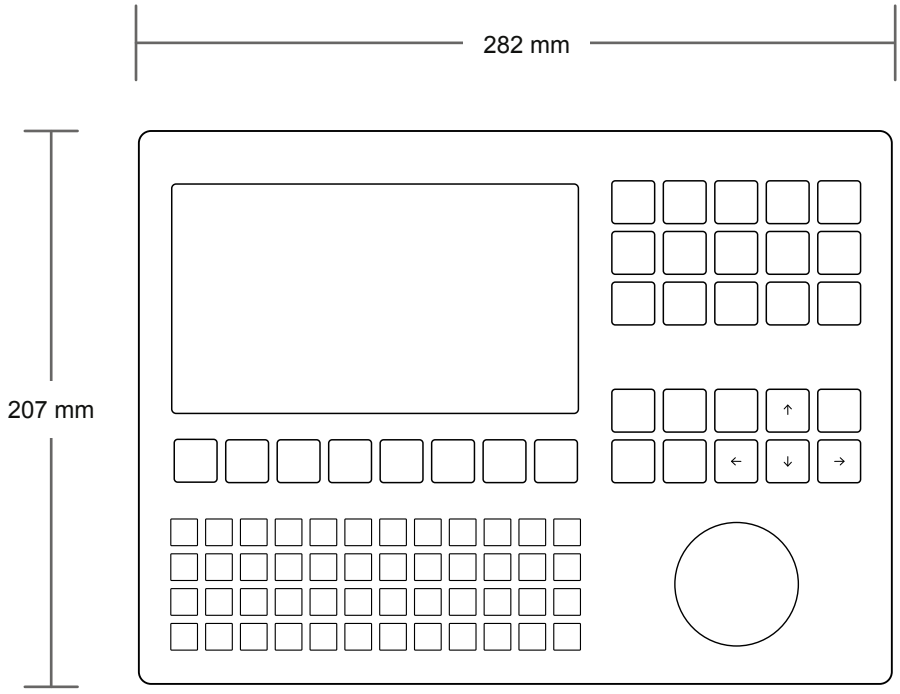
Did you know?

Music trackers emerged in the late 1980's on gaming computers?

1.2 Hardware Overview

Stereo audio output also serves as headphone out.





1.2Kg

1 Overview

1 LCD Display
7 Inch, LCD TFT 800 x 480 Display.

2 Screen Buttons
Dynamic [*Screen buttons*] are dependant on the function displayed above each button.

3 Grid Pads
4 x 12 grid of silicon multifunctional [PADS].

4 Jog Wheel
Rotary (Jog) wheel used for navigation and parameter adjustment.

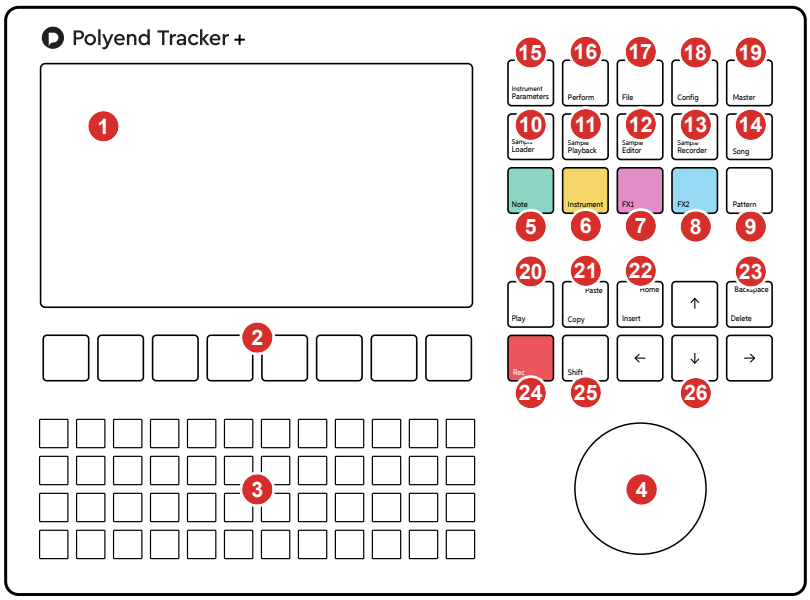
5 Dedicated Note Button
Selection of the [Note] element of a step.

6 Dedicated Instrument Button
Selection of the [Instrument] for a step.

7 Dedicated FX1 Button
Effect selection for [FX1] of a step.

8 Dedicated FX2 Button
Effect selection for [FX2] of a step.

9 Dedicated Pattern Button
[Pattern] mode / page selection.



10 Sample Loader Button
[Sample Loader] opens browser for sample selection.

11 Sample Playback Button
[Sample Playback] opens playback option menu.

12 Sample Editor Button
[Sample Editor] opens editor options.

13 Sample Recorder Button
[Sample Recorder] mode / page selection.

14 Song Mode Button
[Song] mode / page selection.

15 Instrument Parameter Button
Opens the [Instrument Parameter] options.

16 Perform Mode Button
Selects the [Perform] mode / page.

17 File Button
Selects the [File] management options.

18 Config Button
Opens the [Config] options.

19 Master Button
Selects the [Master] mode / page containing master effects and the mixer functions.

20 Play Button
Plays when pressing [Play] the pattern or song. Pressing again stops playback. Play again restarts.

21 Copy / Paste Button
Pressing [Copy/Paste] will copy the selected item. [Shift] + [Copy/Paste] will paste any copied item.

22 Insert / Home Button
Pressing [Insert/Home] will insert. Pressing [Shift] + [Insert/Home] will return 'home', to the top of the pattern.

23 Delete / Backspace Button
Pressing [Delete/Backspace] will reset or step back. [Shift] + [Delete/Backspace] will delete the selected item.

24 Rec Button
Pressing [Rec] will toggle the record mode on or off for editing patterns and perform settings.

25 Shift Button
Pressing [Shift] + Another button will select its secondary function.

26 Navigation Buttons
Four navigation buttons [Up], [Down], [Left], [Right]. Used to manoeuvre through menus and options.

Note that while the screen brightness is adjustable, the command buttons are not backlit which may be an issue in dark environments and during live gigs and performances.

NOTES

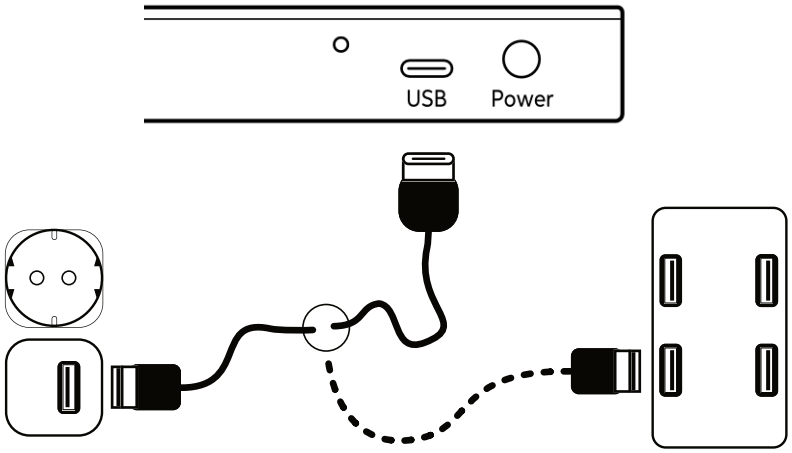
1.3 Start Up

Tracker is a low power user and can therefore be powered from the supplied mains USB adapter or from a rechargeable battery power bank. When restarting Tracker the previously open project will be re-opened

POWERING ON / OFF TRACKER

1. Connect the supplied USB-C Mains cable between Tracker and the supplied USB plug. Also Tracker can operate with a portable USB power bank*. Tracker uses a 5V, 1A rated supply.
2. Ensure the microSD Card is installed correctly for Tracker to operate.
3. Quickly press the small power button located on the rear left (looking from the top). Tracker will start up and the previous project reopened.
4. To power off, press and hold the small power button located on the rear left (looking from the top) until the timer bar ends. Tracker will power off.

Supply is 5V, 1A from the supplied mains to USB adapter.



Alternatively use a battery power bank.
Start up instantaneous current is approx 1.2A with normal state around 0.5A

It is recommended by Polyend to use a standard power bank without smart features. Intelligent / smart power banks or PC / Mac power may have features that interfere with the continuous supply required by Tracker. USB - C to USB - A cable is supplied. USB - C to USB - C is also usable on later Tracker models.

Warning:
Under-powering the Tracker from a hub or computer can result in performance issues or microSD card failure.

1.4 First Steps with Factory Projects.

NOTES

At first glance, operation of Tracker appears unusual. However the workflow is quite simple once a few fundamentals are clearly understood. The quick start button commands shown here can be applied with the factory projects to get familiar with the essential processes to help speed up the learning curve. Ensure the microSD card is installed.

OPENING A PROJECT

1. When powering on the previous project will be restored. Projects can be changed or new ones created. Tracker has a maximum 100 Projects visible and accessible from the microSD card.

2. Press [File] to open the file browser.

3. Press [*Open*] - 2nd screen button from left. The list of available projects will be displayed on the screen.

4. Turn (Jog) or Press [Up] or [Down] to navigate the list of project options. The highlighted option will show with a bounding box.

5. With the desired project highlighted, Press [*Open*] screen button.

6. If the currently active project has been edited a prompt 'Do you want to save the changes to 'xxxx'' will be presented. Press [*Save*] screen button to save or [*Don't Save*] screen button to proceed without saving. The option to cancel is also available.

7. Although not essential, it is usually good practice to display the pattern page at this stage. If required, Press [Pattern] to display pattern page.

ADJUSTING THE MASTER VOLUME.

The master volume may be set loud when initially starting up. Care should be taken when playing songs and especially if listening with headphones. It is advised to firstly set the master volume lower.

1. Hold [Master] + Turn (Jog). Alternatively the [Up] and [Down] buttons can be used instead of the Jog wheel.
   Press [Master] + [Delete/Backspace] to increase volume in step.

2. The Volume, as displayed on the left bar and can be adjusted across a range between -51.5dB to +12dB.

NOTES

PLAYING A PATTERN FROM THE PATTERN OR GENERIC PAGE.

1. Ensure a project with patterns is loaded.
2. Although not essential, it is usually good practice to display the pattern page at this stage. If required, Press [Pattern] to display pattern page. Note that this will play and loop the currently selected pattern, not the entire song, unless the Song page is on display when pressing [Play].
3. Press [Play] to play the currently active pattern.
4. Press [Play] to stop playback on the current step.
   - Pressing [Play] again restarts from the pattern beginning.
   - Pressing [Shift] + [Play] will restart playback from the current paused position.
   - Press [Shift] + [Insert / Home] when play is stopped to reset the playhead to the start without commencing play.

PLAYING A SONG FROM SONG OR PERFORM PAGE.

1. Select song mode, Press [Song]. This will be applicable when a song structure has previously been created for example in factory projects.
2. Press [Play] to play the currently active song. Playback in the Song or Perform page is different to the generic pattern play from within other page views. Each row will represent a series of patterns across the tracks and play rows top to bottom.
3. Press [Play] to stop playback on the current row.
   - Pressing [Play] again restarts playback starting from the beginning of the current row.
   - Pressing [Shift] + [Play] will loop playback for the current row. If playback is in a stopped state, playback will start at the beginning of the current row.
   - Press [Shift] + [Insert / Home] when play is stopped to reset the playhead to the start of the song without commencing play.

1.5 Introduction to Tracks

NOTES

Tracker has 16 tracks. The first 8 can operate with sample instruments, synths and MIDI and tracks 9-16 are used for MIDI and synths. Each can be configured with unique patterns made up of one or more instrument combinations. Tracks are structural elements and the track mixer is found in the master section but some track commands are also available in the pattern pages, for example muting tracks. By default 4 tracks are displayed for the current pattern.

NAVIGATING TRACKS IN THE PATTERN PAGE

1. Press [Pattern] to ensure pattern page is selected. 4 Tracks are displayed by default.
2. Press [Left] or [Right] to navigate across all tracks. The green or red highlighted step will anchor the navigation point.

MUTING TRACKS IN PATTERN PAGE

1. Press [Pattern] to ensure pattern page is selected. 4 Tracks are displayed by default.
2. To mute / unmute, Press [Shift] + The screen button for the respective track. 8 tracks are presented by the screen buttons when holding the shift button. Muted tracks will be displayed by the dimmed screen keys.
3. Muting will be applied immediately the screen button is pressed. This is different in the track mixer, where muting is applied when the mute button is released.

CHANGING TRACKS VIEWED IN THE PATTERN PAGE

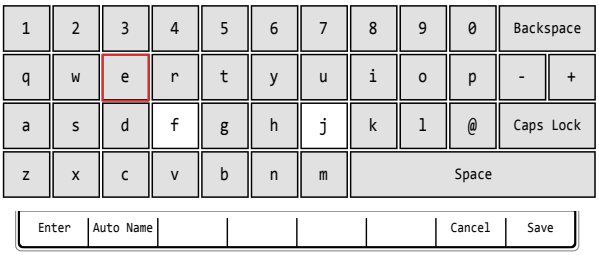
- 8 Tracks with only Note parameter: Press [Pattern] + [Note].
- 8 Tracks with Instrument parameter: Press [Pattern] + [Instrument].
- 8 Tracks with only FX1 parameter: Press [Pattern] + [FX1].
- 8 Tracks with only FX2 parameter: Press [Pattern] + [FX2].
- 8 Tracks with 2 selected parameters: Press [Pattern] + [P1] + [P2], where ‘P1’ and ‘P2’ are 2 from; [Note], [Instrument], [FX1], FX2].
- Revert to 4 track view mode, Press [Pattern]

NOTES

1.6 QWERTY Keyboard.

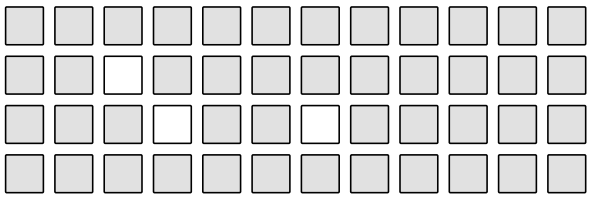
Some pages will require text editing for naming tracks or projects etc. The same functionality applies whenever the Alpha numeric pop-up editor is used. The screen will display the QWERTY keys and the text to edit, while the 4 x 12 pad grid will act as the keyboard's keys. The screen buttons are used to enter, cancel or save.

The screen will display the keys which are represented by the grid pads. The 'f' and 'j' keys are highlighted to give a reference between the pads and the screen characters.



The characters and the title can be selected by using [Up], [Down], [Left] or [Right] buttons to navigate and Press [*Enter*] Screen Button to select the character.

Option to [*Cancel*] from the screen button is also possible. Save when complete using [*Save*] screen button to save the name.



QWERTY Keyboard is represented by the 4 x 12 Grid Pads. The 'f' and 'j' keys are highlighted. The selected character using arrows will also be highlighted bright. and lit on the pads to serve as a reference. Using the pads is a simpler method in entering characters.

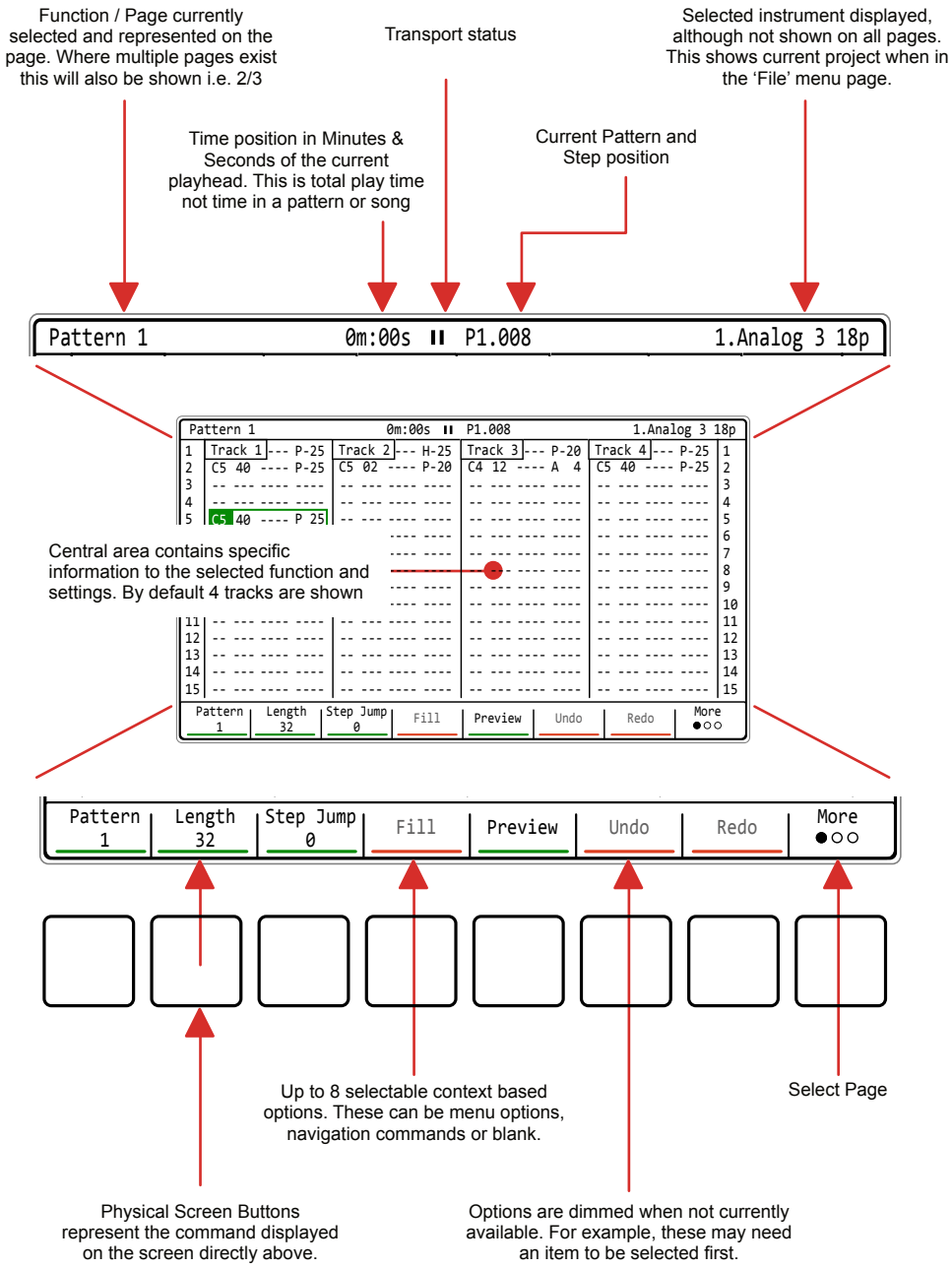
The following Tracker buttons operate in the naming editor when the naming screen is presented:-

- [Up], [Down], [Left], [Right] will navigate the selection across the keyboard. Will navigate left / right in the text of the name when the name is highlighted .
- [Insert / Home] will insert the currently highlighted character into the name at the cursor position.
- [Delete / Backspace] to delete characters and backspace in the name from the text cursor position.

1.7 Page Layout.

NOTES

Each page will display the information and control options for the selected function. While this may be unique to the context there are some common features and navigation principles that apply across all (or most) of the generic pages of Tracker. There are 16 tracks available, the first 8 can be Sample, MIDI or Synth while tracks 9-16 focus only on MIDI or Synths.



Some dynamic screen buttons are underlined red or green in the bottom menu. Red underlined buttons are only accessible when in edit mode. Edit must must be selected for these options.

1.8 Example Workflow.

The workflow adopted with Tracker will of course develop to fit your personal approach. To get started a typical journey is described below.

PROCESS		ACTION	COMMENTS
	S		
Project Global settings usually setup or performed once before or at the start of a new project.	1	Create & Save New Project	The microSD card must be installed to start a new project and use Tracker. Projects are stored on the microSD card. Create a new project
	2	Set Project Tempo	Project Tempo 40-800BPM. FX can apply variations as the patterns develop.
	3	Load Samples to microSD card	Option to manually load uncompressed 44.1KHz, 16bit WAV samples to the microSD card from PC or Mac and accessible to Tracker projects.
	4	Sample Audio into Tracker	Also audio can be recorded as 2ch monophonic files and stored in the audio pool.
Instruments Instruments are created by configuring samples with additional settings and features.	5	Select Audio Sample for Project	Samples can be stored on the microSD card and then loaded into the project audio pool. Up to 48 instruments can be created in a project.
	6	Create Instruments	Instruments are created using a sample or synth as the source. Editing of parameters are applied. Example instruments include a WTFM, VAP, ACD, FAT, PERC Synths, wavetable or granular synths or a sample of sliced beats.
Pattern Steps are assembled to create beats and melodies in a number of patterns.	7	Create Pattern	An empty pattern can be created by setting the tracks, length etc. A project can holds up to 255 patterns. Multiple patterns can be created.
	8	Add Steps and Develop Pattern	An empty pattern is populated with steps. A step contains a Note, Instrument and has 2 FX slots. Assemble steps by track into beats, bass-lines, leads, pads etc.
Song Patterns arranged into a song.	9	Arrange Patterns into a Song	A song is the arrangement of patterns into a single track. This is the arrangement of a complete song where patterns are played in a defined order.
Master & Mix Master effects can be adjusted as can a mix of the tracks to finalise the complete song production.	10	Add Master Effects	While effects can be added to instruments, a master effect section handles the combined audio at the output stage. Effects include a limiter, space, bass boost and EQ
	11	Mix the Tracks	Mix and balance the tracks.
Perform Performance settings can be applied, ideal for a live set.	12	Configure Performance Options	Perform mode allows configuration and live performances with defined control over specific elements. Adds variety and improvised creativity.
Output The project can be saved (is in fact auto saved) and audio rendered if required by bouncing to audio stems.	13	Render Audio Out	Render out audio stems to mix and master further in DAWs or to share with others maybe to create remixes.
	14	Save Project	Although projects are auto-saved, it is always good practice to manually save a finished production. Maybe rename with 'Save As'.
	15	Housekeeping	Yeah yeah…. The boring bit. But it will help as projects develop to keep things tidy. Maybe delete old projects or backup the microSD card.
	E		

1.9 Quick Reference Commands

Function	Action	Tracker Buttons	Description
Master	Master Volume	[Master] + Turn (Jog)	Adjusts the master output
Master	Master Tempo	[Song] + Turn (Jog)	Adjusts the master tempo
Master	General Navigation	[Up], [Down], (Jog)	Generally navigate, scroll menu selections and options
Master	General Navigation	[Left], [Right]	Generally navigate, across page windows, sub menu's, functions and display columns.
Master	Copy / Paste	[Copy / Paste]	Depending on the context, will copy and paste between functions ie copy patterns.
Master	Delete / Backspace	[Delete / Backspace]	Depending on the context, will delete / backup. Will also reset any selected parameter to its default state.
Pattern	Pattern Mode Page	[Pattern]	Selects the pattern mode page.
Pattern	Play Pattern	[Play]	Plays the pattern from the start. Stops / Pauses the pattern if it is already playing
Pattern	Continue Play	[Shift] + [Play]	Restarts play of the pattern from the currently paused position
Pattern	Play Song	[Song] + [Play]	Play song from within the pattern mode page.
Pattern	8 Track Note View	[Pattern] + [Note]	Display all 8 tracks with only notes instead of default 4 tracks. 2 elements can be displayed i.e. + [FX1], [FX2], [Instrument]
Pattern	8 Track Inst View	[Pattern] + [Instrument]	Display 8 tracks with only instrument instead of 4 tracks. 2 elements can be displayed i.e. + [FX1], [FX2], [Note]
Pattern	8 Track FX View	[Pattern] + [FX1] or [FX2]	Display all 8 tracks with only FX instead of default 4 tracks. 2 elements can be displayed i.e. + [Note], [Instrument]
Pattern	4 Track View	[Pattern]	Restores default 4 tracks when viewing 8 tracks
Pattern	Check Patterns	Hold [*Pattern*] Screen Button	Hold pattern screen button to display the available patterns reflected by the lit pads.
Pattern	Select Pattern	[Pattern] + [Up], [Down], (Jog)	Select Pattern number
Pattern	Sequential change	[Pattern] + [Left] or [Right]	When playing, selects a new pattern to cue playback to start when the current pattern ends. Pattern blinks red.
Pattern	Sequential change	[*Pattern*] + [Left] or [Right]	When playing, selects a new pattern to cue playback to start when the current pattern ends. Pattern blinks red.
Pattern	Immediate change	[Pattern] + [Up] or [Down]	When playing, selects a new pattern to trigger a start immediately.
Pattern	Immediate change	[Up] or [Down] or (Jog) or [PAD]	When playing, selects a new pattern to trigger a start immediately.
Pattern	Multiple Step Select	[Shift] + [Up] [Down] [Left] [Right]	Will select groups of multiple steps for editing collectively.
Pattern	Multiple Step Select	[Shift] + [Up] On first step	Will select all steps for the current the track
Pattern	Multiple Step Select	[Shift] + [Up] + [Up] On first step	Will select all steps for all of the tracks
Pattern	Mute Tracks	[Shift] + Screen Button	Screen button 1 - 8 will toggle mute / unmute tracks 1 - 8 respectively when in pattern mode page.
Pattern	Lock Parameter Selection	Tap Dedicated Param Btn	Will lock the selection of the Note, Instrument, FX1 or FX2 parameter when editing or navigating. Also [Shift] +

Italics refer to screen buttons as opposed to physical buttons

1.9 Quick Reference Commands

Function	Action	Tracker Buttons	Description
Pattern	Arm / Disarm	[Shift] + [Rec] + Screen Btn	Arms or Disarms the track for recording. Disarmed tracks will not allow recording. Screen buttons represent tracks.
Pattern	Live Rec > Play	[Rec]	When live recording, pressing [Rec] will continue to play but leave recording mode.
Pattern	Live Rec Start	[Shift] + [Rec]	Start Live Recording
Pattern	Select Top Row	[Shift] + [Insert / Home]	When stopped, resets the playhead to the top row start of the song or start of the pattern.
Song Mode	Song	Press or Hold [Song]	Pressing [Song] switches to song page. Holding [Song] button will temporarily display song page from within another page.
Song Mode	Play Song	[Play]	Plays the song from the start of the current song row.
Song Mode	Stop Song	[Play]	Stops / Pauses the song playback.
Song Mode	Loop Row	[Shift] + [Play]	Loops the current song row / pattern playback
Song Mode	Select Top Row	[Shift] + [Insert / Home]	When stopped, resets the playhead to the top row start of the song or start of the pattern.
Song Mode	Tempo	[Song] + Turn (Jog)	Adjust project tempo, 40 - 800 BPM in 1 BPM increments. Also option to use [Up] or [Down] Instead of (Jog)
Song Mode	Tempo	[Shift] + [Song] + Turn (Jog)	Adjust project tempo, 40 - 800 BPM in 0.1 BPM increments. Also option to use [Up] or [Down] Instead of (Jog)
Perform	Play	[Play]	Plays pattern
Perform	Play	[Shift] + [Play]	Plays song
Perform	In Rec Mode	[Shift] + [Up], [Down] or (Jog)	Change performance effect in current slot
Perform	In Rec Mode	[Shift] + [Left] or [Right]	Swap effects between slots
Perform	In Rec Mode	[PAD] + Turn (Jog)	Edit the effect value offset for the respective pad row
Perform	Not In Rec Mode	[PAD] + Turn (Jog)	Temporary change effect value for the respective pad row
Perform	Select	[*Track x*]	Selects tracks to apply any triggered effect. Track labelled red.
Perform	Perform	[PAD]	Triggers the selected value for the effect for the selected track.
Perform	Remix	[*Track x*] + Turn (Jog)	Immediately load a new pattern for the selected track(s). Live remix mode. Live remix mode.
Perform	Remix	[*Track x*] + [Up] or [Down]	Immediately load a new pattern for the selected track(s). Live remix mode. Live remix mode
Perform	Remix	[*Track x*] + [Left] or [Right]	Load a new pattern for the selected track(s) once the current pattern completes. Live remix mode.
Perform	Mute / Unmute	[Shift] + [*Track x*]	Mute or unmute the selected track
Sample Loader	Navigate	Hold [Left]	In the sample loader browser hold [Left] to jump to start of the left side microSD card browser.
Sample Loader	Batch Select	[Shift] + Arrows	Batch select sample in the sample loader

Italics refer to screen buttons as opposed to physical buttons

NOTES

2

Architecture

Make no mistake, Tracker+ is a unique yet comprehensive device. There are so many features that are less obvious to producers more familiar with more traditional sequencers and DAW's. The overall structure of Tracker+ can seem at first glance, confusing. However spending a little time to understand the overall architecture and its terminology will set a good starting foundation. For this reason there are no apologies for taking time to get intimate with the architecture of the overall device and bringing this summary upfront in this guide. Getting a solid understanding and awareness of the Tracker+ structure will help enormously in getting to grips later with the rest of the device. The four basic elements needed is Tracker+ itself (of course), a USB power source (Power-pack or mains adapter) and the correctly configured microSD card which is integral to the Tracker+ operation. Headphones or a mixer / speakers to also hear the audio output. While more in depth details for specific topics are covered in the following sections of this notebook, the overall foundation and structure is laid out in this section. The hierarchical structure and organisation of data and functions such as Projects, Patterns and Steps are summarised collectively and how they work together. The audio engine is based on either a designated synth model or a sample based instrument. It is therefore worth the investment of time and focus in understanding the architectural hierarchy. Developing a fundamental workflow and efficient process will help get the most out of Tracker+ features.

2 Architecture

2.1 Glossary of Terms

While you may think this should be hidden at the back of this book, understanding the terminology associated with these topics and especially the Tracker will help unlock it's power and performance. It makes sense to become familiar early with the essential terms to help embed into your workflow

Beta: A term normally used for pre-release software versions used for testing purposes. Polyend often release beta versions of Tracker.

Effects: Refers to the master effects used across the overall output audio.

Envelope: An envelope is used to modulate and shape parameters and audio over time. Tracker+ has Envelopes which can be assigned

FX: A number of assignable effects are provided to steps in the pattern. These are not traditional style effects but more like mini-applications and automation controls.

Instrument: In Tracker+, an instrument starts with a sample or synth as its source. Various parameter configurations can be applied including wavetable or granular synth applications to operate as the sound within a step. MIDI instruments to set channel and settings also can be configured.

Instrument List: Also called an instrument pool or audio pool. This is the internal memory. Synths, samples and instruments are loaded here to be accessed by patterns.

LFO: Low frequency oscillator which is not specifically used for sound generation but more so to modulate parameters for sound design and movement. Tracker+ has LFO's which can be assigned.

Looping: The process of replaying audio or a pattern continuously in a defined cycle e.g. start to end then start to end.

MIDI: MIDI stands for Musical Instrument Digital Interface and is a standard protocol used for communicating between equipment. MIDI is normally applied using 5 Pin MIDI DIN connections which in some cases (i.e. with Tracker+) are interfaced via a MIDI 5 Pin to 3.5mm MIDI Dongle.

Mod File. Legacy tracker files such as .mod and .it were used in classic trackers. Beta feature in the current Polyend Tracker+ OS versions.

Mute: Muting offers variations that can be created by silencing the play out of tracks and patterns for sound design purposes and especially when playing live sets.

Note: A musical note assigned to a samples pitch and assigned to track steps to create a melody or percussive beat.

OS: Operating System is the core software that makes Tracker+ work. It handles how it operates and periodic updates from Polyend bring new features into use.

Parameter: The individual value of a specific function or control element. A parameter can be adjusted to affect a sound or a functions operation.

Pattern: This is the backbone and core of a Tracker sequence and contains all steps in a sequence. Patterns control how steps are played.

Perform: A mode in Tracker+ that provides an environment with 12 selectable effects which can be triggered live and during improvisations.

Power Bank. A portable rechargeable battery devices used to power or recharge portable equipment.

Project: The overall structural container for patterns, samples, instruments etc. A project should always be loaded to work with Tracker+.

RAM Memory: While Tracker+ operates with the microSD card, on board RAM memory is also used for instruments and samples in the project.

Render: This is like internal sampling. To internally capture patterns, tracks or songs into an exportable audio sample. Sometimes render is also called ‘bounce’ in the producer community.

Reset: The process of restarting Tracker+ by loading a random OS firmware.

Sample: The basic audio element recorded or loaded into Tracker+ and used to create an instrument.

Sampling: The act (and art) of recording and capturing audio to be edited and creatively assembled into a new musical composition.

SD Card: A storage device that is used in Tracker+ for holding data, samples, project etc. Tracker+ is supplied with a 16GB microSD card.

Solo: The ability to select an individual track to play alone and effectively mutes other tracks.

Song: A combination of tracks and patterns combined and structured into a full arrangement.

Step: In Tracker+ a step is the building blocks for creating melodies and beats. Each step contains a note, instrument and 2 FX slots per track and is displayed in the track rows.

Track: Tracker+ contains 16 tracks. Tracks are used for structuring the sequencing of steps. These can be configured with steps to play a variety of instruments and develop a complete melody and beat across all tracks.

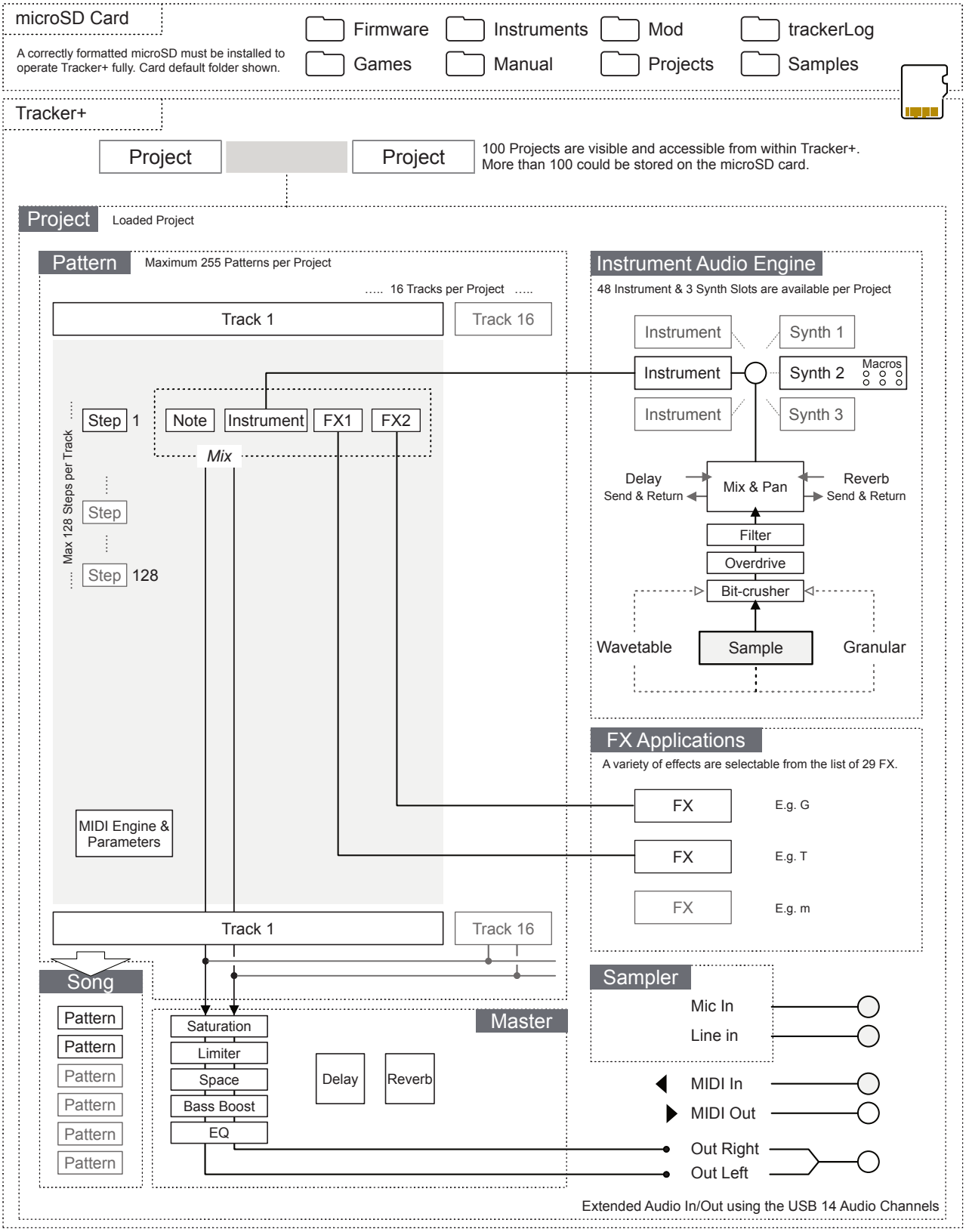
Tracker: Tracker is a digital audio workstation for music production. Trackers use a linear top to bottom sequencing environment where elements are programmed into lines of tracker code.

Update: The process of installing the newest firmware. This brings new features and fixes bugs associated with previous versions.

USB Host: A device that initiates, manages and controls communications across the USB network. For example a PC/Mac would act as a host for say USB MIDI interfacing.

USB Device: A USB device responds to any communication initiated by a host. A device can communicate for example with USB MIDI but may need to be managed from a Host.

2.2 Tracker+ Audio Structure



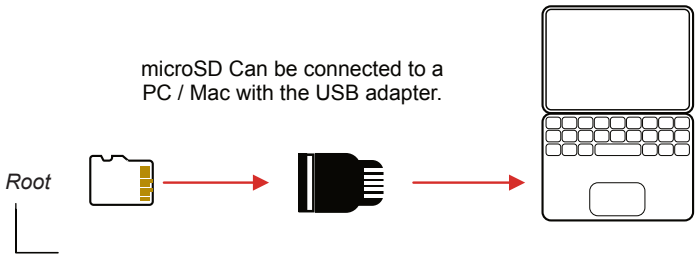
NOTES

2.3 Card Structure

The microSD card is an integral part of Tracker+ and must be inserted to operate correctly. An alert message is displayed if Tracker+ is powered up without an microSD card installed. It is important that the correct format is applied to the microSD card. This should be FAT32 with Master Boot Record (MBR) Partitioning.

The default file structure will expand as different functions are used. For example a snapshots folder is created when capturing screen images, also export and recording folders crated once these files are firstly generated.

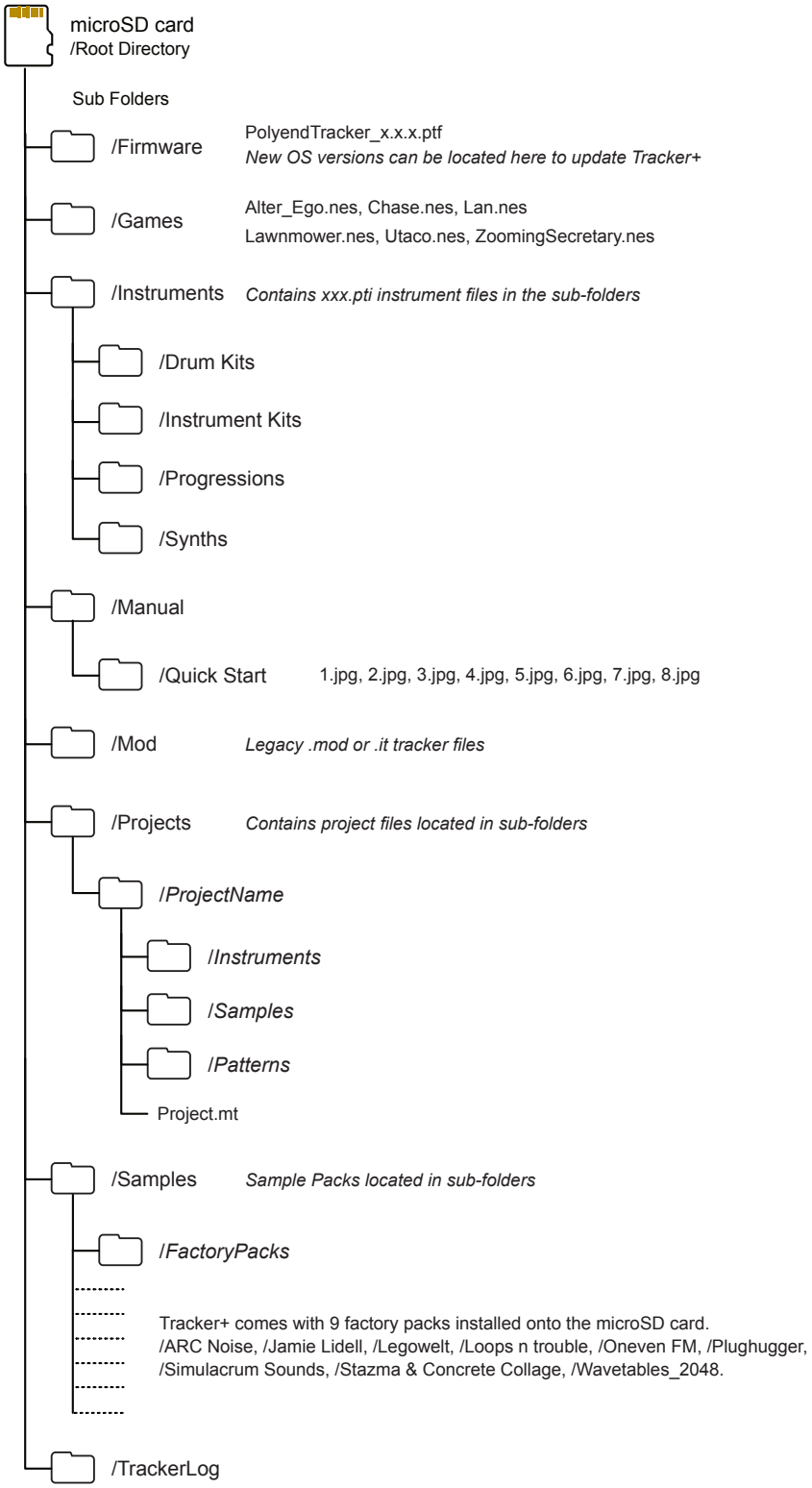
Files and folders can be accessed with a PC or Mac. A USB adapter is supplied with Tracker+.



2 Architecture

NOTES

Default microSD card Structure



NOTES

2.4 Manual Help & Tips

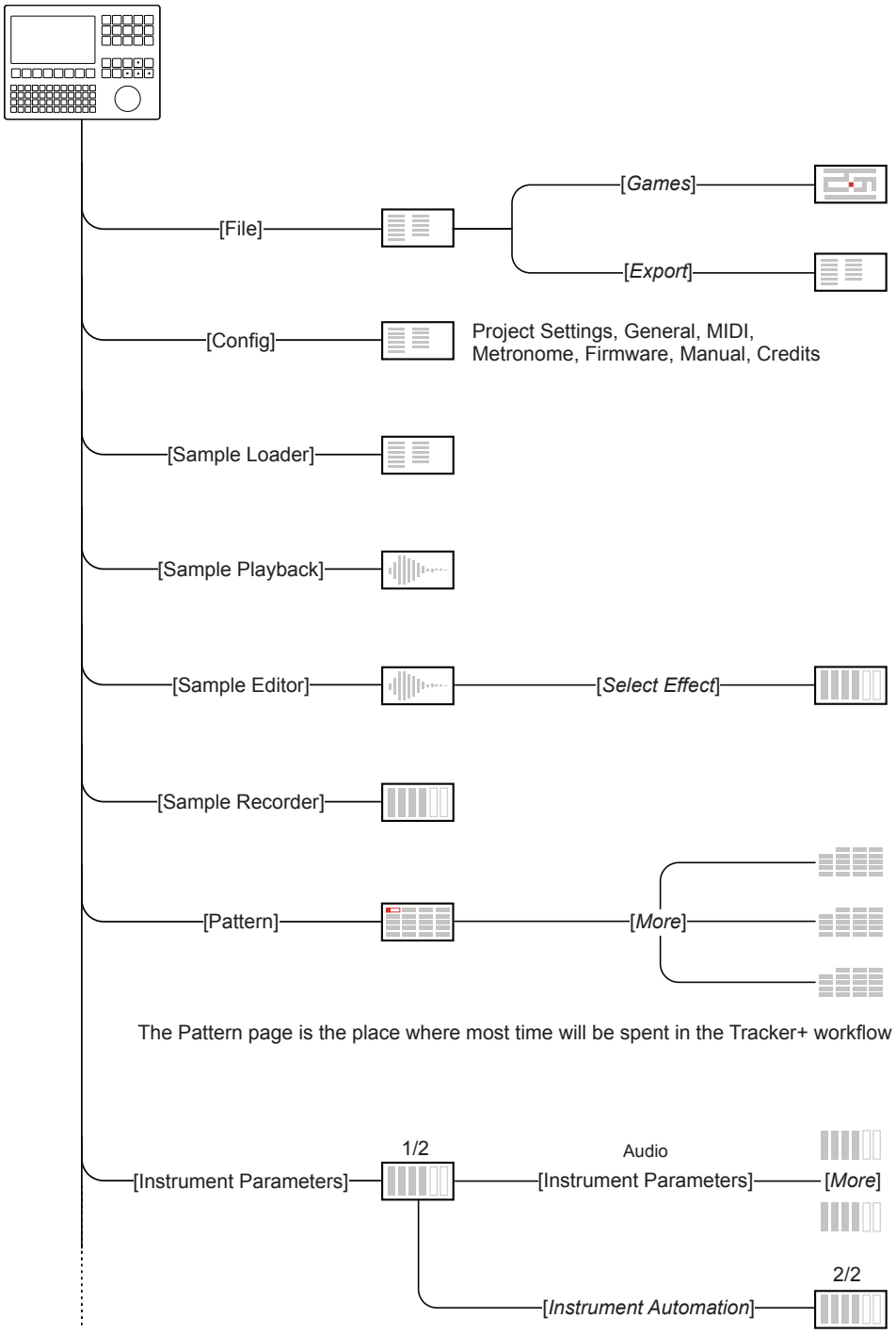
Tracker+ is supplied with a quick start essentials guide, also available on the microSD card.

The official complete manual and Q&A are available on the Polyend website. Please register your device to get full support and access to help.

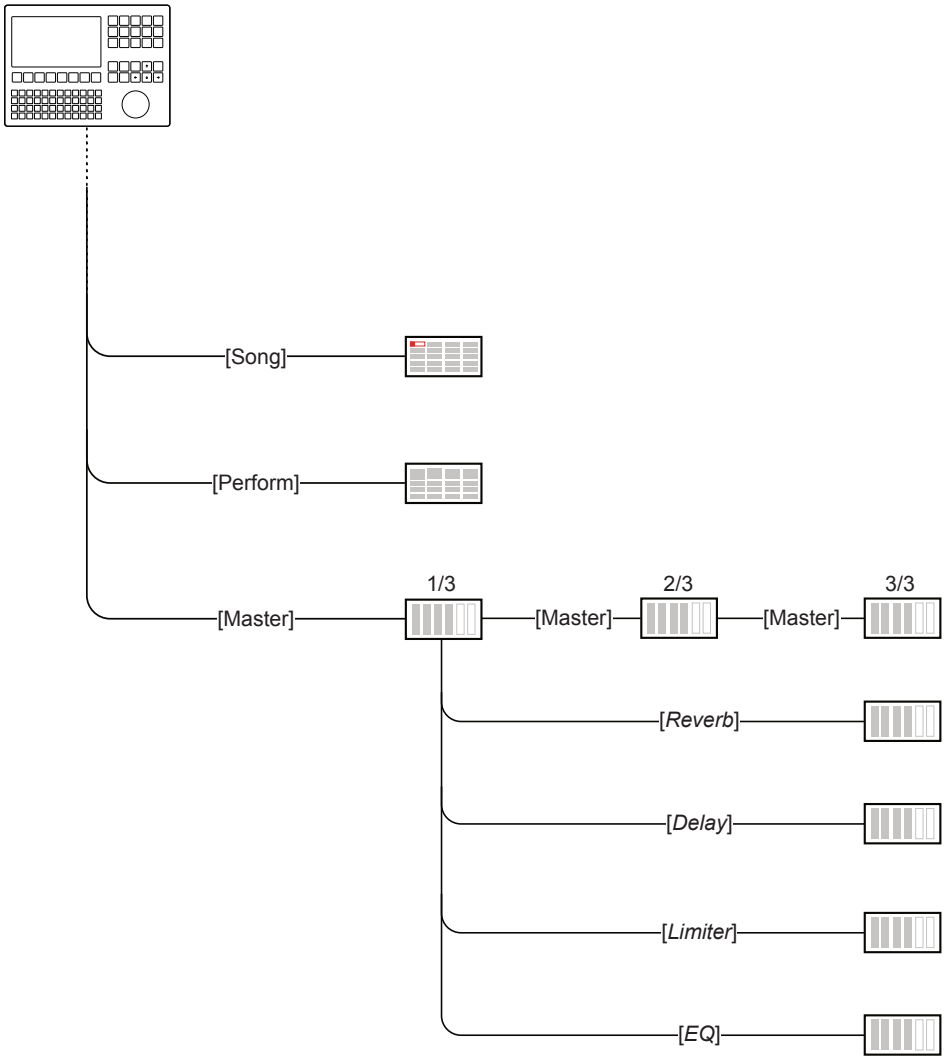
2.5 Page Map

NOTES

As a quick guide to the page hierarchy in Tracker+ the following diagram illustrates the main pages.



NOTES


[Song]
[Perform]
[Master]
1/3
[Master]
2/3
[Master]
3/3
[Reverb]
[Delay]
[Limiter]
[EQ]

NOTES

3

Projects

Projects are the highest order structural element in Tracker+. A project contains all the elements of a full track. Think of each project as a fully arranged song for an album or a song for live set. Tracker+ auto saves projects, which are stored, on the installed microSD card. Although the card itself can contain more, Tracker+ will have up to 100 projects visible and accessible. A project should be opened for playback and editing and new projects can be created from scratch. Each project contains a maximum of 255 patterns across 16 tracks. While patterns are the musical composition functions, some elements, such as the 48 available instruments are managed at project level, and hence accessible to all patterns. Projects are structural and organisational functions more so than part of the creative environment but nevertheless serve an important purpose in the Tracker+ workflow. Project memory for sampling is approx 12 Minutes (Mono) / 6 Mins (stereo) as standard although this may vary depending on the audio quality and format. Samples are stored on the microSD card but can be also are held in the Tracker+ on board sample pool where samples effectively become instruments. Projects have an instrument pool populated with samples or instruments to be available when creating steps. This is prerequisite to creating sequences. This section covers the general project management in Tracker+ and it's microSD card plus some key specific project level functions such as tempo.

3 Projects

3.1 Project Overview

NOTES

A project is the highest order of Tracker+ functions. It allows projects to managed, saved and loaded and new projects to be created. Think of a project as container for a complete song for an album or live set. Access to project level features exists in various parts of Tracker+ functions and does not have a dedicated single point of access.

Project - Max 100 Available in Tracker+.
More projects can be available on the microSD but Tracker+ can access 100.

Tracks - 16 Per Project
Tracks are used to organise parts of a pattern such as bass, drums, etc

Patterns - 255 Patterns Per Project
Patterns are sequenced into tracks to create musical elements.

Steps - 128 Steps per pattern
These are the discrete building blocks each with a note, instrument and effects

Song - 255 Slots (Slots = Rows for the 16 Tracks)
A song is an arrangement of patterns to create a complete production

NOTES

3.2 Opening & Saving a Project - File Menu

Projects are auto saved but can also be manually saved and renamed etc. Loading of a saved project is also possible, although on power up the previously active project will be restored. These project management functions are in the file menu. Note that projects copied to the microSD card must be in the main project folder. Sub folders are not viewed directly from the 'file' menu.

CREATING A NEW PROJECT

1. Press [File] to open the file browser menu.
2. Press [*New Project*] screen button.
3. A blank project named 'NewProject' is created.

OPENING AN EXISTING PROJECT

1. Press [File] to open the file browser menu.
2. Press [*Open*] screen button. The project list is displayed.
3. Turn (Jog) or Press [Up] or [Down] buttons to navigate the list of projects to load. The highlighted option will show with a bounding box.
4. With the desired project highlighted, Press [*Open*] screen button.
5. If the currently active project has been edited a prompt 'Do you want to save the change to 'xxxx'' will be presented. Press [*Save*] screen button to save current project or Press [*Don't Save*] screen button to proceed without saving.
6. If the current pattern is new, a 'Save As' command is activated.
7. If required, Press [Pattern] to display pattern page.

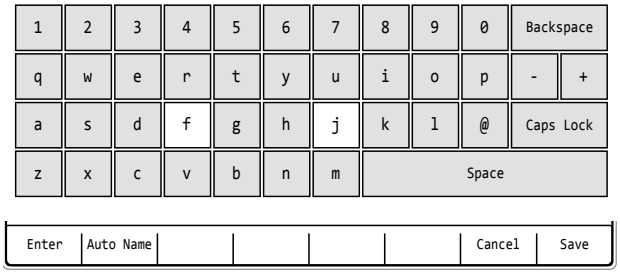
MANUALLY SAVING THE CURRENT / EXISTING PROJECT

1. Press [File] to open the file browser menu.
2. Press [*Save*] screen button.
3. The project will be saved and overwrite the previous version.

NOTES

SAVING THE CURRENT PROJECT - FIRST TIME

1. Press [File] to open the file browser menu.
2. Press [*Save*] or Press [*Save As*] screen button. If using ‘Save’ for the first time the ‘Save As’ function is triggered to request a name.
3. The naming function will appear to allow a new name to be created. The [PAD] buttons will represent the alpha-numeric keyboard. Type in the name required using the [PAD] buttons.
4. Alternatively, press [*Auto Name*] screen button. This will generate a random name for the project and present it in the editor.
5. With the desired name created, Press [*Save*] screen button.
6. The project is saved and the keyboard editor function is closed.



QWERTY Keyboard is represented by the 4 x 12 Grid Pads. The ‘f’ and ‘j’ keys are highlighted and lit on the pads to serve as a reference. The Screen buttons offer the main commands in the context of the editor.

The following Tracker+ buttons also operate in the naming editor when the naming screen is presented:-

- [Up], [Down], [Left], [Right] buttons will navigate the selection across the keyboard. Will also navigate left / right in the text of the name when the name is highlighted .
- [Insert / Home] will insert the currently highlighted character into the name at the cursor position.
- [Backspace] to delete characters and backspace in the name from the text cursor position.

NOTES

3.3 Deleting a Project - File Menu

The option to delete a project can be performed in the project browser. The currently active project cannot be deleted. Change to another project to delete. Note that deleting a project will also remove it from the microSD.

DELETING A PROJECT

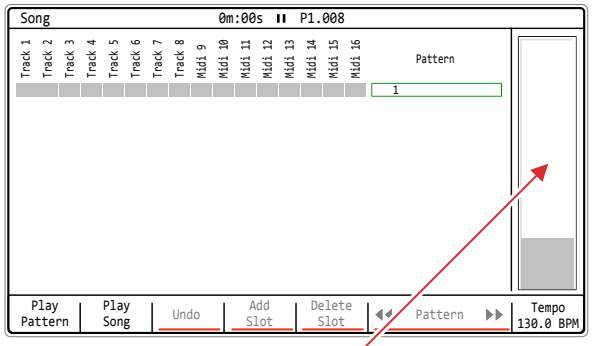
1. Press [File] to open the file browser menu.
2. Press [*Open*] screen button from left. The list of available (max 100) projects will be displayed on the left of the screen.
3. Turn (Jog) or Press [Up] or [Down] buttons to navigate the list of projects. The highlighted option will show with a bounding box.
4. With the desired project highlighted, Press [*Delete*] screen button.
5. A prompt 'Do you want to delete project 'xxxx'' ?' will be presented.
6. To confirm, Press [*Delete*] screen button to confirm deletion. Alternatively, Press [*Cancel*] screen button to exit without deleting the project.
7. Project will be deleted from the microSD card and no longer visible in the project list on Tracker+ *.

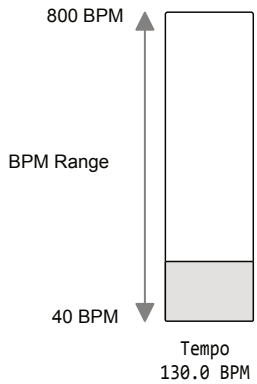
** Projects also manually deleted externally from the microSD card using a PC or Mac will no longer be visible in Tracker+.*

3.4 Project Tempo

NOTES

The overall tempo of the project is set in the ‘Song’ section of Tracker+ and has a defined range of 40 - 800 BPM. Tempo can also be modulated by using the FX slots in a step with the ‘T’ Tempo effect. Note that the MIDI clock output is based on the project tempo.





Hold [Song] + Turn (Jog) to adjust the tempo.

In Song Mode,
Hold [*Tempo*] + Turn (Jog)

Adjust in 0.1BPM Increments
Hold [Shift] + [*Tempo*] + Turn (Jog)

Tap tempo can be applied in Song Mode by tapping the Tempo Screen key a minimum of 4 times at the BPM desired. Count will be displayed when tapping.

Note: Pressing [Delete/Backspace] when tempo is selected will reset to the default 130 BPM. This is generic behaviour, where the [Delete/Backspace] button will reset any selected parameter to it’s default value.

NOTES

QUICK ADJUSTMENT OF THE PROJECT TEMPO

1. Hold [Song] + Turn (Jog) or Press [Up] or [Down] buttons to change the tempo in 1 BPM steps. Range is 40 - 800 BPM.

2. Hold [Shift] + Hold [Song] + Turn (Jog) or Press [Up] or [Down] to change the tempo in 0.1 BPM steps.

GENERAL ADJUSTMENT OF THE PROJECT TEMPO

1. Press [Song] to select the Song Mode page.

2. Hold [*Tempo*] screen button + Turn (Jog) or Press [Up] or [Down] button to change the tempo in 1 BPM steps. Range is 40 - 800 BPM.

3. Hold [Shift] + [*Tempo*] screen button + Turn (Jog) or Press [Up] or [Down] buttons to change the tempo in 0.1 BPM steps.

TAP TEMPO ADJUSTMENT

1. Press [Song] to select the Song Mode page.

2. Tap [*Tempo*] screen button, a minimum of four taps. The tap count will be displayed during tapping.

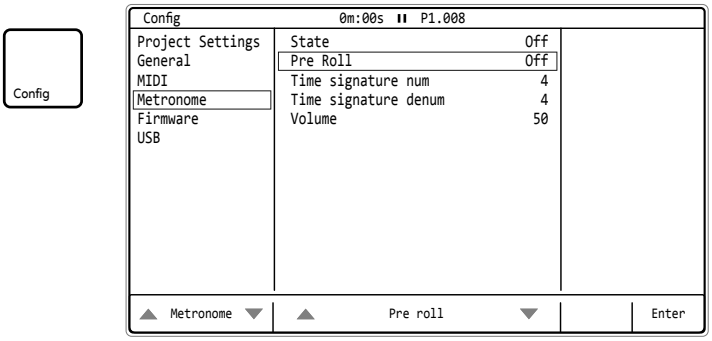
3. The tempo recorded is based on the speed of the taps recorded.

Note that the FX option 'T' Tempo triggers a tempo change between 10% - 400% which can therefore extend the project base tempo range.

3.5 Metronome

NOTES

Tracker+ has a metronome which operates when live recording (not normal playback). This is configurable and selectable on/off within the ‘Config’ menu under the ‘Metronome’ options. These settings are also accessible from the Sample Recorder page.



Press [Left] or [Right] to navigate between the option windows and use [Up] or [Down] to navigate to the desired option.

Metronome Settings.

Option	Parameters	Description
State	On, Off Default Off	Toggles the metronome on or off.
Pre Roll	On, Off Default Off	Sets a count in before the sequencer starts to help timing of punch in recording. Ideal for live recording.
Time signature num	1 - 12 Default 4	Number of beats in a measure / bar. Upper number in the normal time signature value. Example 4/4 set to 4 beats per measure.
Time signature denum	1 - 12 Default 4	Beat value, division of note. Lower number in the normal time signature value. Example 4/4 has a quarter note per beat.
Volume	1 - 100 Default 50	Volume of the metronome’s ‘tick’ sound

NOTES

SETTING THE METRONOME

1. Press [Config] to open the project configuration menu.

2. Ensure the left window is highlighted red i.e. in focus. Navigate windows by pressing [Left] or [Right] buttons. Menu windows will automatically be selected when pressing the relevant screen keys below the window to navigate [*Up*] or [*Down*].

3. Press [Up] [Down] buttons or Turn (Jog) to highlight with the bounding box over the 'Metronome' option. Alternatively press the relevant screen keys below the window to navigate [*Up*] or [*Down*].

4. Press the relevant screen keys below the window to navigate [*Up*] or [*Down*] under the central options to highlight with the bounding box over the required Metronome option.

5. To change the selected parameter / setting, Press [*Enter*] screen button. The parameter pop-up window listing the available options will appear.

6. Turn (Jog) or Press [Up] / [Down] buttons or [*Up*] / [*Down*] screen buttons to highlight the desired option.

7. Press [*Apply*], screen button to confirm selection or press [*Cancel*], screen button to exit without changing.

8. The metronome will operate at the chosen time signature and volume when live recording is activated using [Rec] + [Play]. The Pre roll will provide a count in of 4 and show the 'Recording in 4. 3. 2. 1.' message before starting to record.

3.6 Project Pool & Instrument List

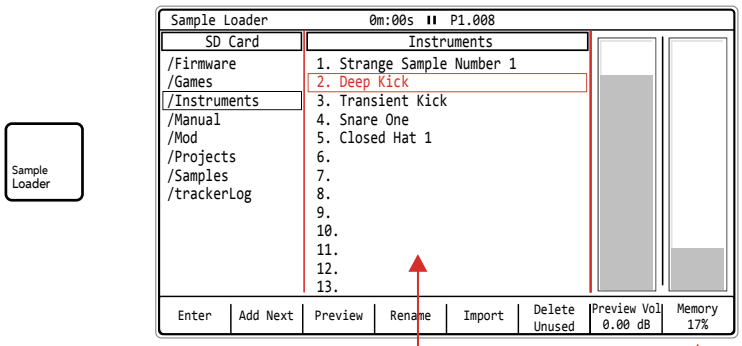
NOTES

A pre-requisite for creating patterns is to have a series of instruments available to record or program into steps. Instruments can be based on the samples loaded into the project pool and parameters applied to create instruments or can be one of the 3 synth slots loaded with one of the four synth models. Instruments can also be loaded from other projects but must exist in the current project instrument list to be accessible to the pattern steps. A maximum of 48 instruments are available per project depending on the sample size and hence memory usage.

An instrument or sample from the microSD libraries can be added into the active project instrument list. The instrument list is used to configure steps.

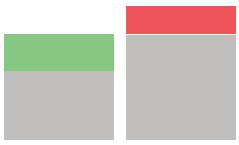
Basics of setting up a project instrument list using the [Sample Loader] function is shown and further details on the sample management are detailed later. A sample based instrument should be selected and not a synth in order to edit and managed within the sample loader.

Press [Left] or [Right] to navigate between the option windows a red bounding box will indicate the selected window. Press [Up] or [Down] or Turn (Jog) to navigate to the desired listed option.



Window display pains between microSD and Instrument List. Max 48 instruments can be stored in a Tracker+ project.

Project memory available based on the selected samples / instruments in the instrument list.



The bar will show an additional red element - if memory will increase and green bar - if memory will decrease when browsing a sample / instrument indicating potential memory impact if sample / instrument is added.

NOTES

CREATING A PROJECT SAMPLE INSTRUMENT LIST

1. Press [Sample Loader] to open the sample browser and instrument list utility page. Ensure a sample based instrument is previously selected and and not a synth slot.

2. Navigate to the central 'Instruments' window and highlight either an empty slot or an existing instrument. If an existing instrument is highlighted it will be replaced by the newly selected choice.

3. Navigate to the left 'SD card' window and highlight either instruments or samples. Use the [Up] or [Down] buttons or Turn (Jog) to navigate and Press [*Enter*] screen button to select folder. Use [Shift] + Arrows to batch select multiple samples / instruments.

4. With a sample or instrument highlighted in the left window, press the [*Add*], screen button. This will add or replace in the selected instrument slot. Using [*Add Next*], screen button will add a sample and will automatically jump the cursor to the next slot.

5. The memory bar chart will indicate the available project memory in Tracker+. This will depend on the type and size of samples selected and may limit the amount of instruments available in the instrument list.

6. Additional samples / instruments can be added. The instruments in the list will be available to add to a step.

Notes:

- A prompt will be offered if replacing an existing instrument.
- When navigating, the /.. symbol indicates folders and subfolder with a name. Selecting /.. alone will navigate up a level of the microSD card folder structure.
- Instruments have a .pti filename.
- The memory bar will show an additional red band (increases memory usage) or green band (decreases memory usage) indicating the potential memory impact when highlighting a sample / instrument to add. Should this be added to the instrument pool it will affect the memory usage as indicated by the red/green bar.

NOTES

DELETING AN INSTRUMENT FROM THE LIST

1. Press [Sample Loader] to open the sample browser and instrument list utility page.

2. Navigate to the central 'Instruments' window and highlight an existing instrument. If an existing instrument is highlighted it will be the one deleted in this process. Use [Shift] + Arrows to batch select multiple samples / instruments.

3. Press [Delete / Backspace].

4. A prompt asking if you want to continue on to delete the highlighted sample / instrument. Press [*No*], screen button to cancel without deleting or confirm deletion by pressing [*Yes*], screen button.

5. The instrument is removed from the list but is still present on the microSD card.

6. The memory bar chart will indicate the available project memory in Tracker+. This will depend on the type and size of samples selected and may limit the amount of instruments available in the instrument list.

7. Additional samples / instruments can be deleted. The instruments in the list will be available to use in the project.

DELETING ALL UNUSED INSTRUMENTS FROM THE LIST

1. Press [Sample Loader] to open the sample browser and instrument list utility page.

2. Navigate to the central 'Instruments' window.

3. Press [*Delete Unused*], screen button.

4. A prompt asking if you want to continue on to delete the highlighted sample / instrument. Press [*No*], screen button to cancel without deleting or confirm deletion by pressing [*Yes*], screen button.

5. Any instruments that are in the list but not used in the project are removed from the list. The microSD card files remain intact.

6. The memory bar chart will indicate the available project memory in Tracker+. This will depend on the type and size of samples selected and may limit the amount of instruments available in the instrument list.

NOTES

IMPORTING TO THE PROJECT INSTRUMENT LIST

1. Press [Sample Loader] to open the sample browser and instrument list utility page.

2. Navigate to the left 'SD Card' window and navigate to and highlight a sample to import. Use the [Up] or [Down] button or Turn (Jog) to navigate and Press [*Enter*] screen button to select folder.

3. Navigate to the central 'Instruments' window and highlight either an empty slot or an existing instrument. If an existing instrument is highlighted it will be replaced by the newly selected choice.

4. Press [*Import*] screen button. The sample is displayed for editing. Pressing [*Cancel*], screen button at any time to leave the import menu without importing.

5. The sample can have its start [*Start*], screen button and end [*End*], screen button adjusted. Select each and use (Jog) to adjust. This is a great feature when samples are too long or only a portion is needed.

6. Press [*Preview*], screen button to listen to the sample. The option to adjust the preview audio volume with, [Preview Vol], screen button.

7. When editing is complete, select an import option to load the sample into the instrument list:-

   - Press [*Import Low Quality*], screen button. This will import a lower quality sample. This will create a smaller file size and save memory. The trade off is audio sound quality reduction.

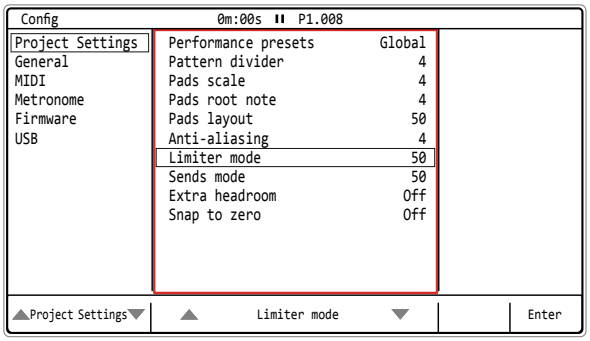
   - Press [*Import Normal*], screen button. This will import a sample at the normal Tracker+ quality specification. This will create a larger file size and take up more memory. The trade off is optimum audio sound quality.

Sample based Instruments can also be copied and pasted within the sample loader and instrument list browser to duplicate and instrument. Use the [Copy/Paste] dedicated button to undertake this task.

3.7 Summary of Configuration Options

NOTES

A number of options can be set in the ‘Config’ menu. These defaults may be good enough to get started but specific changes may suit certain workflows and situations better. The details of these will be covered in relevant sections and only an overview of global settings is provided here.



Press [Left] or [Right] to navigate between the option windows a red bounding box will indicate the selected window. Press [Up] or [Down] or Turn (Jog) to navigate to the desired listed option.

Also the [*Up*] and [*Down*] screen buttons will select the option and automatically select the menu window.

Config Options

Menu	Option	Description	Book Section
Project Settings	Performance Presets	Allows performance presets to be saved either as a global configuration or local to each project.	Performance Mode
Project Settings	Pattern Divider	Sets the highlight level for the selected step offering better pattern visualisation.	Pattern Format
Project Settings	Pads Scale	Sets the scaling of the 4 x 12 grid pads when used for note playback / selection.	Sequencing Steps
Project Settings	Pads Root Note	Sets the root note between C2 - C4 of the bottom left pad in the 4 x 12 grid pad matrix.	Sequencing Steps
Project Settings	Pads Layout	Sets the note offset in semitones 1-12 for the pad located directly above the root note in pad grid.	Sequencing Steps
Project Settings	Anti-aliasing	Anti-aliasing set to ‘On’ gives a cleaner sound for sample playback. Off is more lo-fi vintage feel.	
Project Settings	Limiter Mode	Sets the characteristics of the limiter attack and release between subtle and extreme.	Master Effects
Project Settings	Sends Mode	Sets the sends to pre-fader i.e. independent of volume or post-fader.	Master Effects
Project Settings	Extra Headroom	Avoid clipping by adding extra headroom in the output audio.	
Project settings	Snap to Zero	Snap audio crossings to zero points, Used as green markers in the sample playback page.	Instruments
General	Radio Region	Sets the radio frequencies to match the geographic region, Europe, Australia, US, Japan.	Audio
General	Display Brightness	Adjusts the brightness level of the 7” display between three settings: High, Medium, Low.	System
General	Display Theme	The colour scheme of the screen. Original has the dark background while monochrome is bright.	System
General	Display Font	Text font option. Original has the classic consolas look while ‘new’ is smaller, more standard.	System
General	Pad Brightness	Adjusts the brightness of the 4 x 12 grid pads: High, Medium, Low.	System
General	Pads Preview	Allows the grid pads to be used to highlight notes in the active track or pattern lines in the grid editor.	

Menu	Option	Description	Book Section
General	Recording Options	Sets the options for what is recorded i.e. notes, quantization, micro-timing, velocity.	Sequencing Steps
General	Numbering Mode	Sets all numbers to the decimal starting at 0 or 1 or hexadecimal format. Classic look and feel.	System
General	Pattern Arrangement	Sets the pattern display to the traditional vertical original, vertical revolver or horizontal display.	Patterns
General	Pattern Top Info	Allows the top part of the pattern screen to display only the track name, additional info or off.	Patterns
General	Line In Channel	Selects the physical audio input for the global mixer and sample recorder. Stereo, mono left, mono right.	Audio
MIDI	Clock In	Sets the source of the master clock, Internal (default) or external USB or MIDI In jack.	MIDI
MIDI	Clock Out	Sets the Tracker+ Mini clock output. Off, USB, MIDI Out jack, USB + MIDI Out jack.	MIDI
MIDI	Transport In	Sets the source of transport control commands, Internal (default) or external USB or MIDI In jack.	MIDI
MIDI	Transport Out	Sets the output of transport control commands, Off, USB, MIDI Out jack or USB+MIDI jack options.	MIDI
MIDI	Notes In	Sets the input routing of external notes in. Set to Off, USB, MIDI In jack or USB+MIDI jack options.	MIDI
MIDI	Notes In Channel	Sets the MIDI channel for incoming notes from external gear. Select All channels or Ch 1-16.	MIDI
MIDI	MIDI Out	Sets the MIDI output routing between, Off, USB, MIDI Out jack or USB+MIDI jack options.	MIDI
MIDI	CC In	Sets CC (control change) input routing to Off, USB, MIDI In jack, USB+MIDI In jack.	MIDI
MIDI	CC In channel	Sets MIDI channel for CC (control change) incoming messages. Select All channels or Ch 1-16.	MIDI
MIDI	Middle C	Sets middle C as C-3, C-4, C-5, C-6. Calibrates range in Tracker+ with external gear.	MIDI
MIDI	Clock Sync Correction	Latency compensation for incoming sync. -6 to +6. Use with MIDI Jack or USB clock in.	MIDI

Menu	Option	Description	Book Section
USB	Storage	A USB connected PC / Mac will see the Tracker+ microSD card as an external storage drive. Files can be then be transferred directly to / from the installed microSD when in this mode.	System
USB	Audio	Enables USB audio In, Out or both. Can also disable the USB audio by setting to off.	Audio
Metronome	State	Turns the metronome on or off for live recording.	Projects
Metronome	Pre Roll	Provides a count in of 4 before starting to record.	Projects
Metronome	Time signature num	Upper numerator of the time signature	Projects
Metronome	Time signature denum	Lower denominator of the time signature	Project
Metronome	Volume	Volume level of metronome	Projects
Firmware	Firmware Update	Activates a firmware update based on the OS located on the microSD card in the ‘firmware’ folder.	System
Firmware	Current version	Displays current version of installed OS. Visual indicator only.	System
Firmware	Build	Firmware build version display	
Firmware	Reset config	Resets this configuration menu to the default original settings.	System
Info	Licenses		

4

Pattern Format

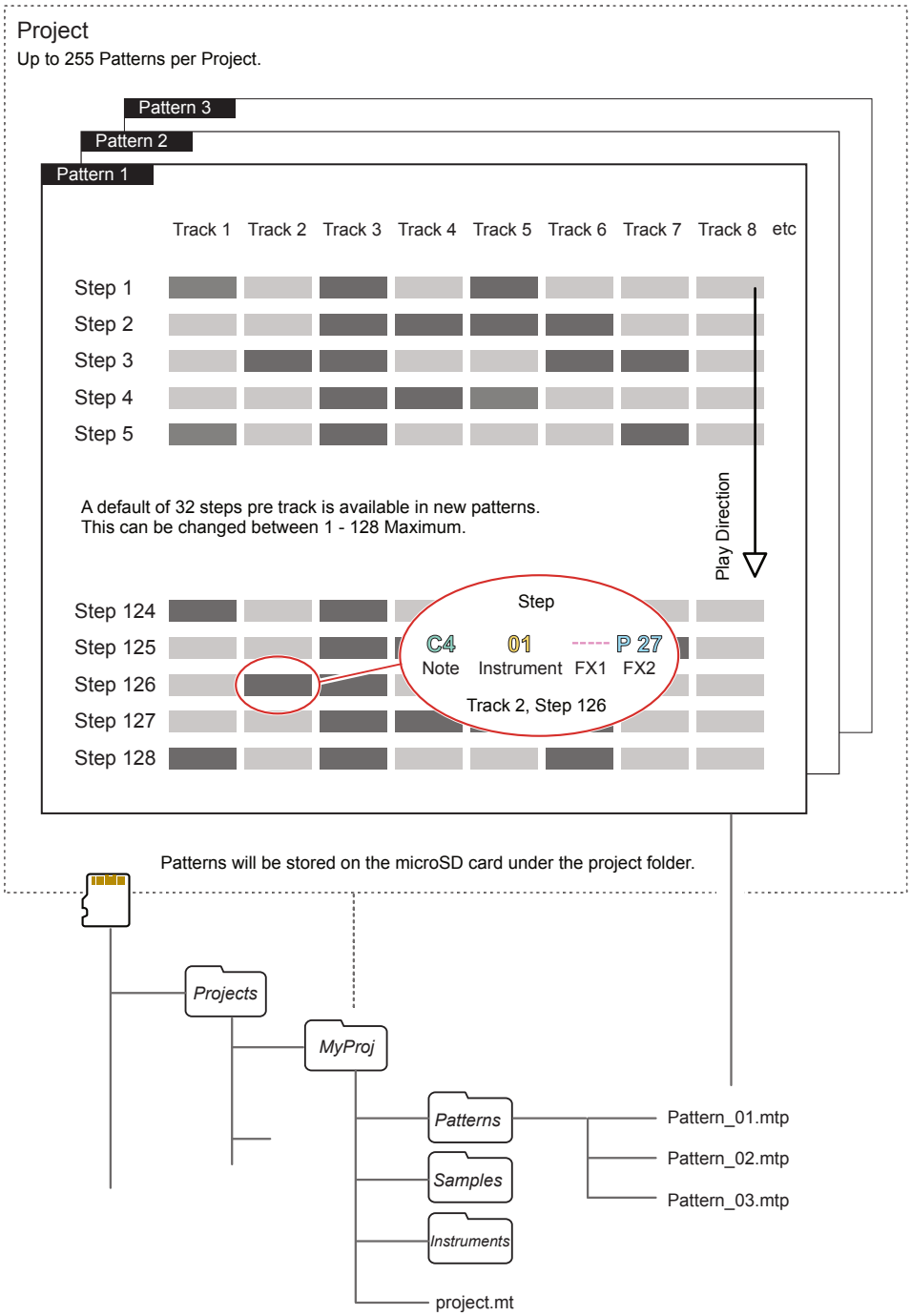
Each project contains a maximum of 255 patterns across 16 tracks, 8 instrument and 8 MIDI. Each pattern can hold up to 128 steps per track. Patterns are at the heart of Tracker+ and are built in the pattern sequencer. The sequencer is what makes Tracker+ different from normal digital audio workstations. Steps are the building blocks when creating patterns and by assembling these into audio arrangements it is possible to create beats and melodies. Each step consists of a note, instrument and two FX slots. These are triggered as each row is activated when playback is initiated. The can trigger audio information, effect actions or MIDI messages. Patterns are bite size elements of a full song and can be created as individual modules built using steps. Patterns are then combined and arranged together in song mode for chaining into a full length track. This section will focus on patterns using in audio tracks (although MIDI steps can be created together with audio). This section will provide overall guidance on creating basic patterns as well as their structural elements generally. This is a foundation to patterns and a deeper dive into steps and sequencing comes next. All the basic building blocks and the process needed to get started in creating, editing and using a basic pattern are covered in this section. More advanced and in-depth elements of the components of a step are covered later as well as more advanced sequencing functions.

4 Pattern Format

4.1 What's a Pattern?

NOTES

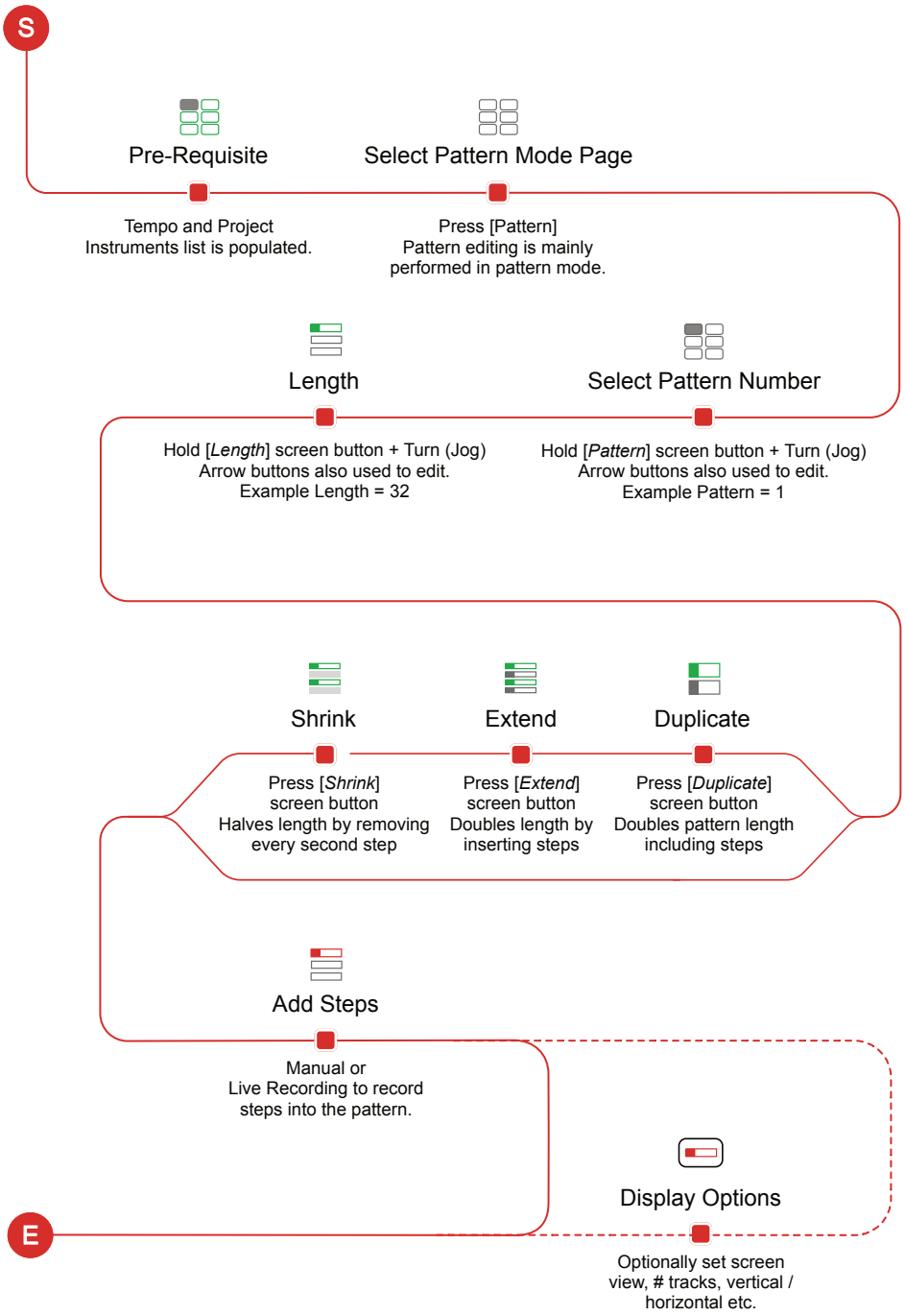
Patterns are a combination of 16 Tracks where each has a series of steps mapped out. The steps form into a melody or beat. So for example Track 1 could be the Drums, Track 2 for Percussion, Track 3 as Bass etc. Patterns can be created using steps manually 'programmed' into the Tracker+ or by recording in real time.



NOTES

4.2 Process of Creating a Pattern

Formatting and creating a pattern is a simple process but there are some good practices that will speed up workflow and help to move quickly to making music. A pattern is the container for steps and establishes the step timing and track format. The dynamic screen buttons are used heavily.

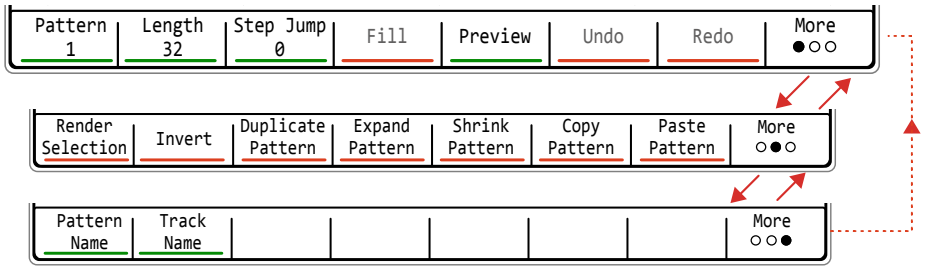


4.3 Configuring a Pattern

NOTES

Pattern and step editing is performed in ‘Pattern’ Mode. The first requirement is to create the pattern itself where steps can later be added to create the melody or beat. Commands for the pattern are available from the dynamic screen buttons located at the bottom of the page. These will change depending on the mode or selection made.

The dynamic screen buttons labelled at the bottom of the page will control options for creating patterns. Underscored red color indicates if recording mode is required to be on to access the command.



Menu Option	Function	Description
Pattern	Pattern Selection	Selects a pattern to edit. This will select a pattern number between 1-255 in the project.
Length	Pattern Length	Adjust the number of step rows in the pattern. Default is 32 but a maximum of 128 rows are available in a pattern.
Step Jump	Programming Aid	Assists in recording steps with the pads. Will automatically jump the selection cursor in defined steps.
Fill	Programming Aid	Assists in programming steps. Will automatically fill steps based on defined selection criteria
Preview	Instrument Preview	Will play the instrument for the step to allow previewing of the sound.
Undo	Undo Last Command	If available, will reset the previous state prior to the last action, effectively undoing the last (up to 20) commands.
Redo	Redo Last Command	If available, will restore the previous state after to the last action, effectively redoing the last (up to 20) commands.
Render Selection	Bounce Audio	Renders the selection to a new audio sample. Useful to use elsewhere or to reduce track consumption.
Invert	Invert Steps	Inverts all steps in the selection vertically
Duplicate Pattern	Extends Pattern	Extends the entire pattern and its associated steps, extending the pattern to double the length.
Expand Pattern	Extends Pattern	Extends the pattern by adding blank steps in between existing steps, extending the pattern to double the length.
Shrink Pattern	Contracts Pattern	Contracts the pattern length by deleting every 2nd step, reducing the pattern to half the length.
Copy Pattern	Copy	Copies the entire pattern to the virtual clipboard.
Paste Pattern	Paste	Pastes the copied pattern from the virtual clipboard into the location starting at the current position.
Pattern Name	Name the Pattern	Opens the alpha-numeric keyboard to change or edit the current pattern name.
Track Name	Name the Track	Opens the alpha-numeric keyboard to change or edit the current track name.
More	Change Page	Selects the next page of commands

NOTES

SELECTING THE PATTERN MODE PAGE

1. Press [Pattern] to select the pattern mode page.
2. The options for the pattern page will show at the bottom of the page and are represented by the 8 screen buttons.
3. To change the options page, Press [*More*], screen button. This toggles between the two pages of pattern options.

SELECTING A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. Ensure options page 1 is displayed. Press [*More*] to toggle between the available pages of pattern options.
3. Hold [*Pattern*] screen button or [Pattern] button + Turn (Jog). Arrow buttons can be used instead of Jog. A pattern number between 1-255 can be selected, identified upper left on the display. Blank patterns selected have 32 steps as default.
4. The currently active pattern number is displayed top left in the info bar.

ADJUSTING THE PATTERN LENGTH

1. Press [Pattern] to select the pattern mode page.
2. Ensure options page 1 is displayed. Press [*More*] to toggle between the pages of pattern options.
3. Hold [*Length*] screen button + Turn (Jog). A pattern length between 1-128 steps can be selected. Default is 32. The arrow buttons can be used instead of Jog where [Left] or [Right] will set length in predefined denominations i.e. 1, 2, 4, 8, 16 etc

Tip: It is good practice to build patterns starting with a small length. For example start with 8 or 16 steps and create the beat or melody. This can then be duplicated / extended along with its steps and then edited to create longer passages.

NOTES

EXTENDING PATTERN LENGTH

1. Press [Pattern] to select the pattern mode page.

2. Ensure options page 2 is displayed. Press [*More*] to toggle between the pages of pattern options.

3. Press [Rec] to select recording mode and allow editing, Cursor is red. Screen buttons will be unavailable, shown dim, otherwise.

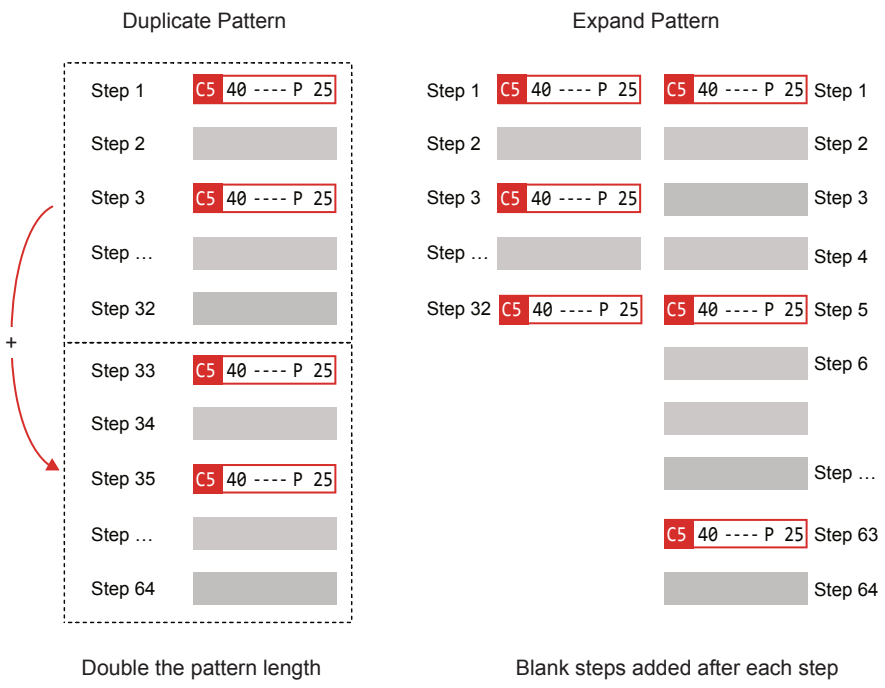
4. The current pattern can be extended in severals ways. The options available via the screen buttons are:-

    1. Press [*Duplicate Pattern*]. The pattern will be extended by duplicating the full pattern along with its steps. Effectively doubles the pattern length.

    2. Press [*Expand Pattern*]. The pattern will be extended by inserting additional step rows in-between existing steps. Effectively doubles by stretching the pattern length.

    3. Also, as stated from Page 1, adjusting [*Length*] will also increase the pattern length. New empty step rows added at the end.

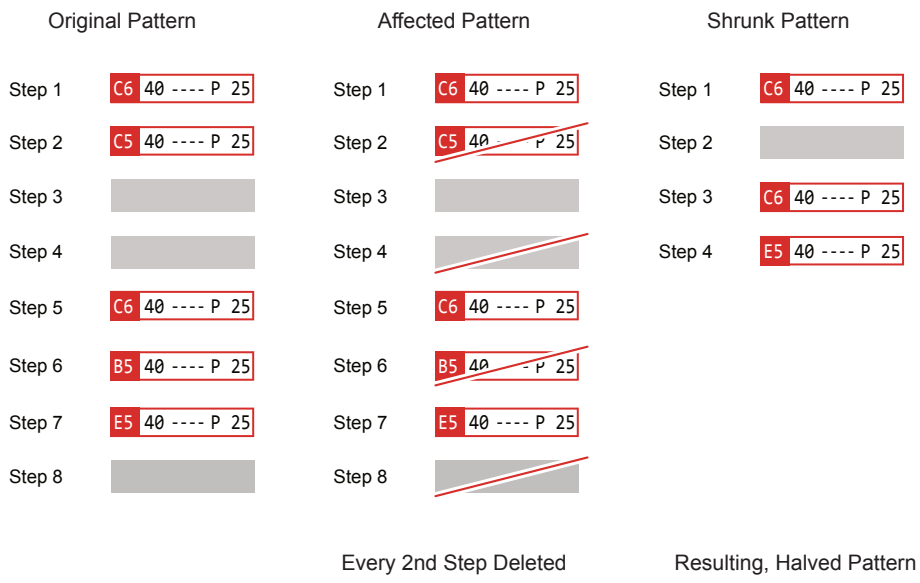
5. The [*Undo*] or [*Redo*] screen buttons can be used if required to restore a previous state.



NOTES

REDUCING PATTERN LENGTH

1. Press [Pattern] to select the pattern mode page.
2. Ensure options page 2 is displayed. Press [*More*] to toggle between the pages of pattern options.
3. Press [Rec] to select recording mode and allow editing. Cursor is red. Screen buttons will be unavailable, shown dim, otherwise.
4. The current pattern can be reduced in severals ways. The options available via the screen buttons are:-
    1. Press [*Shrink Pattern*]. The pattern will be reduced by deleting each second step in the pattern. This will delete any step whether empty or filled. Effectively halves the pattern length.
    2. Also, as stated from Page 1, adjusting [*Length*] will also reduce the pattern length. Any steps will be hidden but will be restored if the pattern length is extended.
5. The [*Undo*] or [*Redo*] screen buttons can be used if required to restore a previous state.



4.4 Copying and Pasting a Pattern

NOTES

Patterns can be copied and pasted between different pattern slots. This will copy the entire pattern and its steps as well as the length configuration.

COPYING AND PASTING A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. The options on pages 1 & 2 are required during this process. Press [*More*] to toggle between the pages of pattern options.
3. Press [Rec] to select recording mode and allow editing. Cursor is red. Screen buttons will be unavailable, shown dim, otherwise.
4. Select source pattern. In any page Hold [Pattern] button + Turn (Jog) to select the pattern to copy. Alternatively use [*Pattern*] screen button on pattern page 1. Example, select Pattern 1.
5. On pattern page 2, Press [*Copy Pattern*] screen button. The pattern is copied to the clipboard.
6. Select destination pattern slot. In any page Hold [Pattern] button + Turn (Jog) to select the pattern destination. Alternatively use [*Pattern*] screen button on pattern page 1. Example, select Pattern 2.
7. On pattern page 2, Press [*Paste Pattern*] screen button. The pattern is pasted into the current pattern and will overwrite any existing data. It is possible to continue to paste the pattern into other pattern slots.
8. The [*Undo*] or [*Redo*] screen buttons can be used if required to restore a previous pattern state.

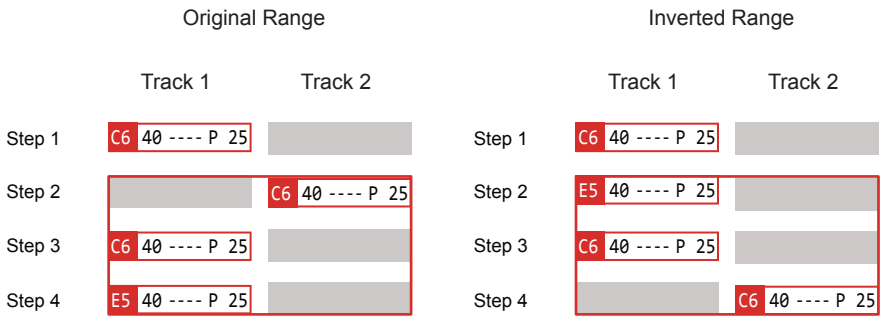
NOTES

4.5 Inverting a Selection of Steps

Patterns are created top to bottom and steps assigned in the step rows. Steps once selected in a pattern can be inverted. This will reverse the order in which the steps play. For example the first step in the selection will play last and vice versa.

INVERTING A STEP RANGE IN A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. Ensure options page 2 is displayed. Press [*More*] to toggle between the pages of pattern options.
3. Press [Rec] to select recording mode and allow editing. Cursor is red. Screen buttons will be unavailable, shown dim, otherwise.
4. Select range. Navigate to the first anchor step. Press [Shift] + [Up] or [Down] to select the sequence of steps and / or Press [Shift] + [Left] + [Right] to select steps across tracks.
5. Press [*Invert*] Screen Button to reverse the order of the range of steps selected. This reverses the vertical order of the steps. The steps remain in their respective tracks.
6. The [*Undo*] or [*Redo*] screen buttons can be used if required to restore a previous state.



Selected Range 2 - 4 Bounded in Red

Inverted Range 2-4 Bounded in red

4.6 Pattern Mode Page Layout Options

NOTES

Pattern and step editing is performed in ‘Pattern’ Mode, selected by pressing the [Pattern] button. Navigate when green, [Rec] off. Step edit when red, [Rec] on. Pattern mode view can be changed in the config.

Press [Shift] + [Insert / Home] to reset the cursor position to the start, step 1

Change the pattern info for the top bar in the Config settings: General > Pattern top info. Top bar: Off, Tracks Names or Additional Info

Step Row

The ‘top down’ view can be changed to vertical or horizontal in the Config settings; General > Pattern Arrangement

To select a step

Press [Up] or [Down] or Turn (Jog)* to navigate vertically in the Tracker+ grid. Cursor will wrap past the end to the start when using arrow keys

Press [Left] or [Right] to navigate horizontally in the Tracker+ grid

* In step edit mode, red, (Jog) edits the step

Switch to 8 Track view.
Displays a single element across a block of 8 tracks

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
- - -	C5	- - -	- - -	- - -	- - -	- - -	- - -
- - -	C5	C4	D2	- - -	- - -	- - -	- - -
- - -	- - -	C4	- - -	- - -	- - -	- - -	- - -

[Pattern] + [Note] - Displays 8 tracks, with only the note parameters

[Pattern] + [Instrument] - Displays 8 tracks, with only the instrument parameters

[Pattern] + [FX1] - Displays 8 tracks, with only FX1 parameters

[Pattern] + [FX2] - Displays 8 tracks, with only FX2 parameters

Hold [Pattern] + A combo of max 2 parameter buttons: Note, Instrument, FX1, FX2 to display 2 parameters per track across 8 tracks.

Press [Pattern] to return to 4 tracks, all step parameters

NOTES

NAVIGATING THE PATTERN MODE EDITOR PAGE

1. Press [Pattern] to select the pattern mode page.
2. The step cursor will display a green border with the selected step parameter highlighted green in normal playback mode. This indicates the step in focus and the current playhead position.
3. To move the position vertically, Press [Up] or [Down]. The selection will scroll and will wrap at the end of the pattern back to the top. Also Turn (Jog) to navigate up and down within the step range.
4. To move the position horizontally across tracks, or Press [Left] or [Right]. The selection will scroll across the 1-4 visible tracks and switch across the other tracks at the right of the page. This view is default.
5. Press [Shift] + [Up], [Down], [Left] and [Right] to select rather than just navigate a range of steps.
6. To return the playhead / step selector to the top step 1 of the pattern, Press [Shift] + [Insert / Home] when the sequencer is stopped.

CHANGING FROM 4 TO 8 TRACK VIEW

1. By default the pattern page display 4 tracks. This can be changed to display 8 tracks with a various step options:-
   - 8 Tracks with only Note parameter: Press [Pattern] + [Note].
   - 8 Tracks with Instrument parameter: Press [Pattern] + [Instrument].
   - 8 Tracks with only FX1 parameter: Press [Pattern] + [FX1].
   - 8 Tracks with only FX2 parameter: Press [Pattern] + [FX2].
   - 8 Tracks with 2 selected parameters: Press [Pattern] + [P1] + [P2], where ‘P1’ and ‘P2’ are 2 from; [Note], [Instrument], [FX1], FX2].
   - Revert to 4 track mode, Press [Pattern]

NOTES

CHANGING BETWEEN VERTICAL AND HORIZONTAL VIEW MODE

1. The default mode is for Tracker+ to display patterns top to bottom in a vertical original arrangement. This is the traditional and expected view for trackers in general. This can be changed to Vertical Revolver: Scrolls endlessly across all rows or a Horizontal left to right view. This is less common but may suit people more accustomed to more modern DAW arrangements.

2. Press [Config] to open the project configuration menu.

3. Ensure the left window is highlighted red i.e. in focus. Navigate windows by pressing [Left] or [Right]. Menu windows will automatically be selected when pressing the relevant screen keys below the window to navigate [*Up*] or [*Down*].

4. Press [Up] [Down] or Turn (Jog) to highlight with the bounding box the ‘General’ option. Alternatively press the relevant screen keys below the window to navigate [*Up*] or [*Down*].

5. Highlight the General options. Navigate windows by pressing [Left] or [Right]. Menu windows will automatically be selected when pressing the relevant screen keys below the window to navigate [*Up*] or [*Down*].

6. Press [Up] [Down] or Turn (Jog) to highlight with the bounding box over the ‘Pattern Arrangement’ option. Alternatively press the relevant screen keys below the window to navigate [*Up*] or [*Down*].

7. To change the options between horizontal and vertical views, Press [*Enter*]. The parameter pop-up window listing the options will appear.

8. Turn (Jog) or Press [Up] / [Down] or [*Up*] / [*Down*] Screen Buttons to highlight the desired option.

    - Vertical Revolver - Tracks scroll top to bottom and are displayed in and endless revolving sequence.

    - Vertical Original - Tracks scroll top to bottom. The tracks are shown as one set end to end.

    - Horizontal - Track scrolls left to right.

9. Press [*Apply*] screen button to confirm selection or [*Cancel*] screen button to exit without changing.

10. The pattern display will reflect the selected option.

NOTES

CHANGING PATTERN TOP INFO DETAILS

1. The default mode is for Tracker+ to display an information bar plus the tracks at the top of the pattern display. This can be changed to give more clarity to the tracker pattern grid.

2. Press [Config] to open the project configuration menu.

3. Ensure the left window is highlighted red i.e. in focus. Navigate windows by pressing [Left] or [Right]. Menu windows will automatically be selected when pressing the relevant screen keys below the window to navigate [*Up*] or [*Down*].

4. Press [Up] [Down] or Turn (Jog) to highlight with the bounding box the 'General' option. Alternatively press the relevant screen keys below the window to navigate [*Up*] or [*Down*].

5. Highlight red the General options window. Navigate windows by pressing [Left] or [Right]. Menu windows will automatically be selected when pressing the relevant screen keys below the window to navigate [*Up*] or [*Down*].

6. Press [Up] [Down] or Turn (Jog) to highlight with the bounding box over the 'Pattern Top Info' option. Alternatively press the relevant screen keys below the window to navigate [*Up*] or [*Down*].

7. To change the select between horizontal and vertical views, Press [*Enter*]. The parameter pop-up window listing the available options will appear.

8. Turn (Jog) or Press [Up] / [Down] or [*Up*] / [*Down*] Screen Buttons to highlight the desired option.

   - Off - No information is displayed at the top of the page.

   - Track Names - Only display the track name information.

   - Additional Info: Display tracks, and upper bar expanded information, such as time, transport, pattern, instrument etc. This is default.

9. Press [*Apply*] screen button to confirm selection or [*Cancel*] screen button to exit without changing.

10. The display will reflect the selected option.

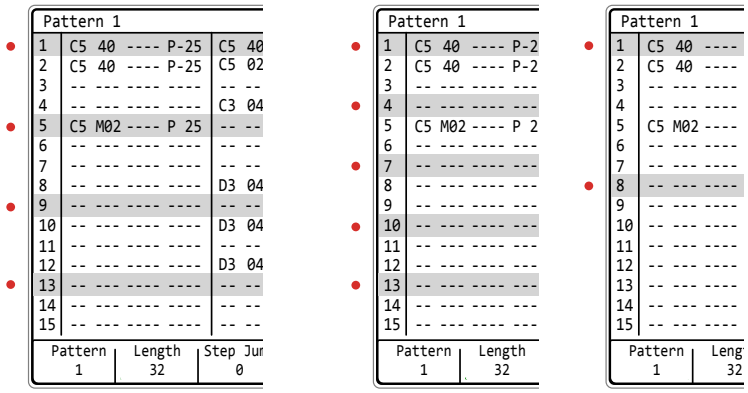
NOTES

CHANGING THE PATTERN GRID VISUAL DIVIDERS

The pattern grid has a number of graphic guides as a visual aids when sequencing steps into a pattern. This is by default set to divisions of 4 providing a visual on beat guide at rows 1, 5, 9 etc. These can be changed in the ‘Config’ menu settings.

1. Press [Config] to open the project configuration menu.
2. Navigate to ‘Project Settings’ option. Navigate windows by pressing [Left] or [Right]. Menu windows will also be automatically be selected when pressing the relevant screen keys below the menu window to navigate [*Up*] or [*Down*].
3. In the project setting options, central window, highlight ‘Pattern Divider’.
4. Press [*Enter*] screen button.
5. Turn (Jog) or Press [Up] / [Down] or [*Up*] / [*Down*] Screen Buttons to highlight the desired option between 1 - 16.
6. Press [*Apply*] screen button to confirm selection or [*Cancel*] screen button to exit without changing.
7. The display will reflect the new visual indicator divider bars.

Pattern Divider Setting in ‘Config’ Menu under ‘Project Settings’



Visual Dividers to aid step positioning. Default shown = 4.

Pattern Divider. Example = 3.

Pattern Divider. Example = 7.

NOTES

Track and Pattern Names

Track and pattern names can be edited and changed to custom text in the in the Pattern Function. Track name length is maximum 7 characters. The defaults are Track 1, Track 2, Track 3 etc but can be set to more appropriate names such as drums, perc, bass etc. Track names can also be changed in the master, track mixer page.

EDITING PATTERN NAME

1. Press [Pattern] to select the pattern mode page. This consists of a set of menu pages and each is cycled in turn by pressing the [*More*] screen button option.

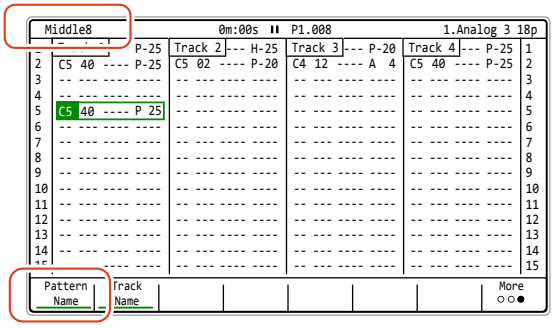
2. Ensure the pattern to edit is selected. This can be changed with [*Pattern*] screen button on the first menu page. The change will affect the current pattern only.

3. Navigate to menu page 3 of 3 using [*More*].

4. The option to change the pattern name is presented. Press [*Pattern Name*] screen button to select the alpha-numeric pop-up editor.

5. The Alpha numeric QWERTY keyboard will be displayed and enable the default ‘Pattern 1’ name to be changed. Edit as per normal using the QWERTY functions with the pads or navigation arrows and screen button commands. Auto naming is also an option.

6. Press [*Save*] screen button, to confirm and immediately save the new name for the pattern. Press [*Cancel*] to exit without saving.



NOTES

EDITING THE CURRENT TRACK NAME

1. Press [Pattern] to select the pattern mode page. This consists of a set of menu pages and each is cycled in turn by pressing the [*More*] screen button option.

2. Ensure the pattern to edit is selected. This can be changed with [*Pattern*] screen button on the first menu page.

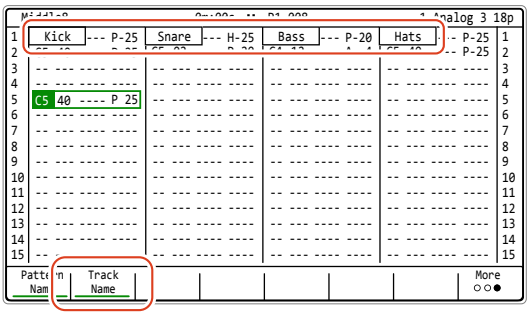
3. Also navigate to the track column to edit using [Left] or [Right] to move the selection box horizontally. Only the track selected will be edited.

4. Navigate to menu page 3 of 3 using [*More*].

5. The option to change the track name is presented. Press [*Track Name*] screen button to select the alpha-numeric pop-up editor.

6. The Alpha numeric QWERTY keyboard will be displayed and enable the default ‘Track 1’ name to be changed. Edit as per normal using the QWERTY functions with the pads or navigation arrows and screen button commands. Auto naming is not possible for tracks.

7. Press [*Save*] screen button, to confirm and immediately save the new name for the track. Press [*Cancel*] to exit without saving.



Note that the displaying of track name can changed in the main config options. This is found in the ‘General’ menu under the ‘Pattern top info’ option. Track names can be on or off or additional info presented.

NOTES

Track names can be edited and changed to custom text in the Master section as well as in the Pattern Function. Track name length is maximum 7 characters.

EDITING TRACK NAMES FROM WITHIN THE TRACK MIXER

1. Press [Master] to select the master mode page. This consists of several pages and each is cycled in turn by pressing [Master] button. Page is displayed top bar, left side.

2. Navigate to page 2 of 3 - Sample Track Mixer. A number of tracks are displayed in this view.

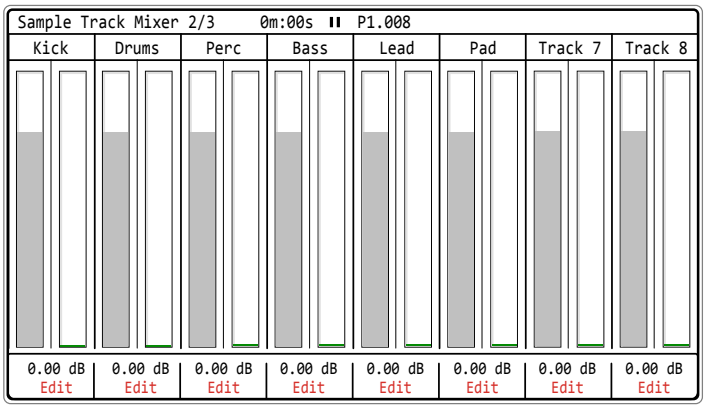
3. Press [Rec] and the editing mode will be toggled on or off. Set to on, as indicated by the word 'Edit' in red at the bottom of each track and representing the screen buttons per track.

4. Press the relevant screen button 1 - 8 for the track to edit. For example, Press Screen Button for Track 1.

5. The Alpha numeric QWERTY keyboard will be displayed and enable the default 'Track 1' name to be changed. Edit as per normal using the QWERTY functions with the pads or navigation arrows and screen button commands. Maximum 7 characters available for track names.

6. Press [*Save*] screen button, to confirm and immediately save the new name for the track.

7. Repeat step 4 - 6 for other tracks if required.



Press [Rec] to toggle the track name editor on or off on the [Master] Page 2/3. Press a screen button 1 - 8 to select the specific track to edit.

4.7 Quick Start Step Creation

NOTES

Patterns are just empty containers and will require steps to be added to create a beat of melody. A step is essentially a note, instrument (based on a sample) and two effect slots. This section gives a quick start on step composition before moving to more in depth coverage in a future section.

ADDING STEPS IN A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. To move the position vertically, Press [Up] or [Down] or Turn (Jog). To move the position horizontally across tracks, or Press [Left] or [Right]. Ranges can be selected using [Shift] + (Jog) or Arrow Buttons.
3. Select recording mode, Press [Rec]. The steps selected will appear red as opposed to green for normal playback mode.
4. To add a step, Hold the dedicated step function button and set the step using the grid pads or the jog wheel.
   - Hold [Note] + [PAD] or Turn (Jog). Adds a note value to the step.
   - Hold [Instrument] + [PAD] or Turn (Jog). Adds an instrument from the instrument list. This will require instruments to be available in the instrument list. Default notes are also assigned.
   - Hold [FX1] + [PAD] or Turn (Jog). Adds an effect from the effect list to the step
   - Hold [FX2] + [PAD] or Turn (Jog). Adds an effect from the effect list to the step
5. Subsequently pressing [PAD] will add a step based on the currently chosen parameter and pad.
6. Pressing [Rec] + [Play] will allow live recording of adding steps.

NOTES

EDITING EXISTING STEPS IN A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. To move the position vertically, Press [Up] or [Down] or Turn (Jog). To move the position horizontally across tracks, or Press [Left] or [Right]. Ranges can be selected using [Shift] + Arrow Buttons.
3. Select recording mode, Press [Rec]. The steps selected will appear red as opposed to green for playback mode.
4. To edit a step, press the dedicated step function button i.e. [Note], [Instrument], [FX1], [FX2] and the selection will highlight the parameter in the step selection bounding box.
5. Turn (Jog) to change the selected parameter for the current step.

DELETING STEPS IN A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. To move the position vertically, Press [Up] or [Down] or Turn (Jog). To move the position horizontally across tracks, or Press [Left] or [Right].
3. Ensure a note or instrument parameter is selected. Deleting when the FX1 or FX2 parameter is selected will only delete the FX parameter setting and not the full step. MIDI Instruments would need the parameter deleting specifically
4. Press [Delete / Backspace]. The selected step or step range will be deleted from the pattern.

INSERTING STEPS IN A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. To move the position vertically, Press [Up] or [Down] or Turn (Jog). To move the position horizontally across tracks, or Press [Left] or [Right].
3. Press [Insert / Home]. A new empty step row is added and the selected step and steps below are moved down.

5

Sequencing Steps

Steps and patterns go hand in hand. The earlier Pattern Format section covered the general pattern creation, structure and general navigation of patterns. Also the process of adding and editing steps at a fundamental level. This section goes further into the workflow and process of sequencing steps and takes a deeper dive and more advanced view. The four components of a step; Note, Instrument, FX1 and FX2 are explained in more detail, giving an insight into what's behind each one. The multiple options in the process of working with steps as well as the detailed explanations such as how to create an instrument or what each effect does are included. Steps can be used for melodies beats and with multiple tracks can create chords. The focus here will be on the audio elements of steps with MIDI specifically covered in more detail in a later section although a similar process applied to both. Note that of the 16 available tracks, the first 8 can be used for sample based instruments as well as synths and MIDI instruments while Tracks 9-16 can only be used for synths and MIDI instruments. The section has a heavy focus on the process and techniques associated with working with steps in patterns. The included workflow tools and tips will speed up the process of creating patterns and making music and help to become more comfortable in using Tracker+.

5.1 Dedicated Step Parameter Buttons

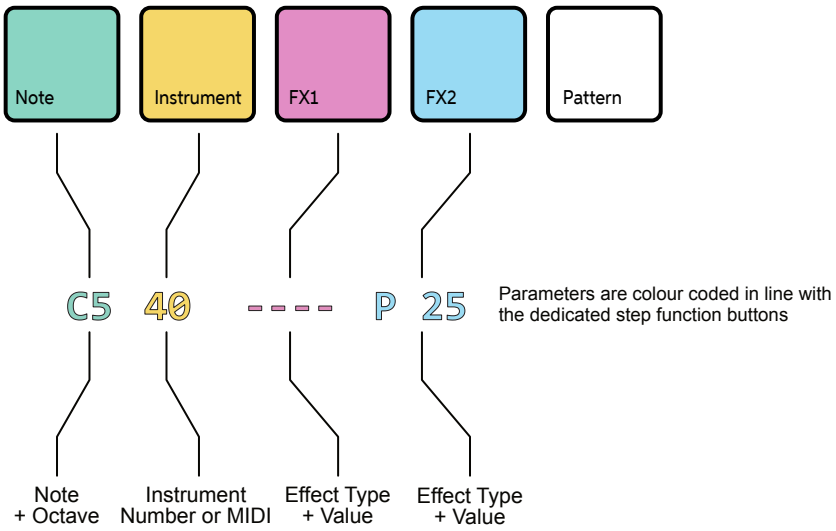
NOTES

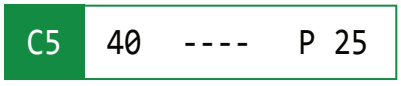
A step is a building block which triggers events such as playing a note or beat or activating a MIDI action and is used for creating patterns. Steps are programmed across pattern rows which represent each of the eight available tracks in the pattern sequence.

A step is a combination of 4 main components each of which has a dedicated selection button:-

- Note. This sets the pitch of the step and is important for creating melodies or beats based on sample mapped drum hits.
- Instrument. This is a synth or sample and a combination of the parameters and settings assigned to it. Also for setting MIDI Channel.
- FX1. The first effect slot where the modulation and audio effects can be applied for the step.
- FX2. The second effect slot where the modulation and audio effects can be applied for the step.

Step Dedicated Parameter Buttons
Pattern page is selected by pressing [Pattern] while the Note, Instrument, FX1 and FX2 have dedicated buttons for editing the selected step.





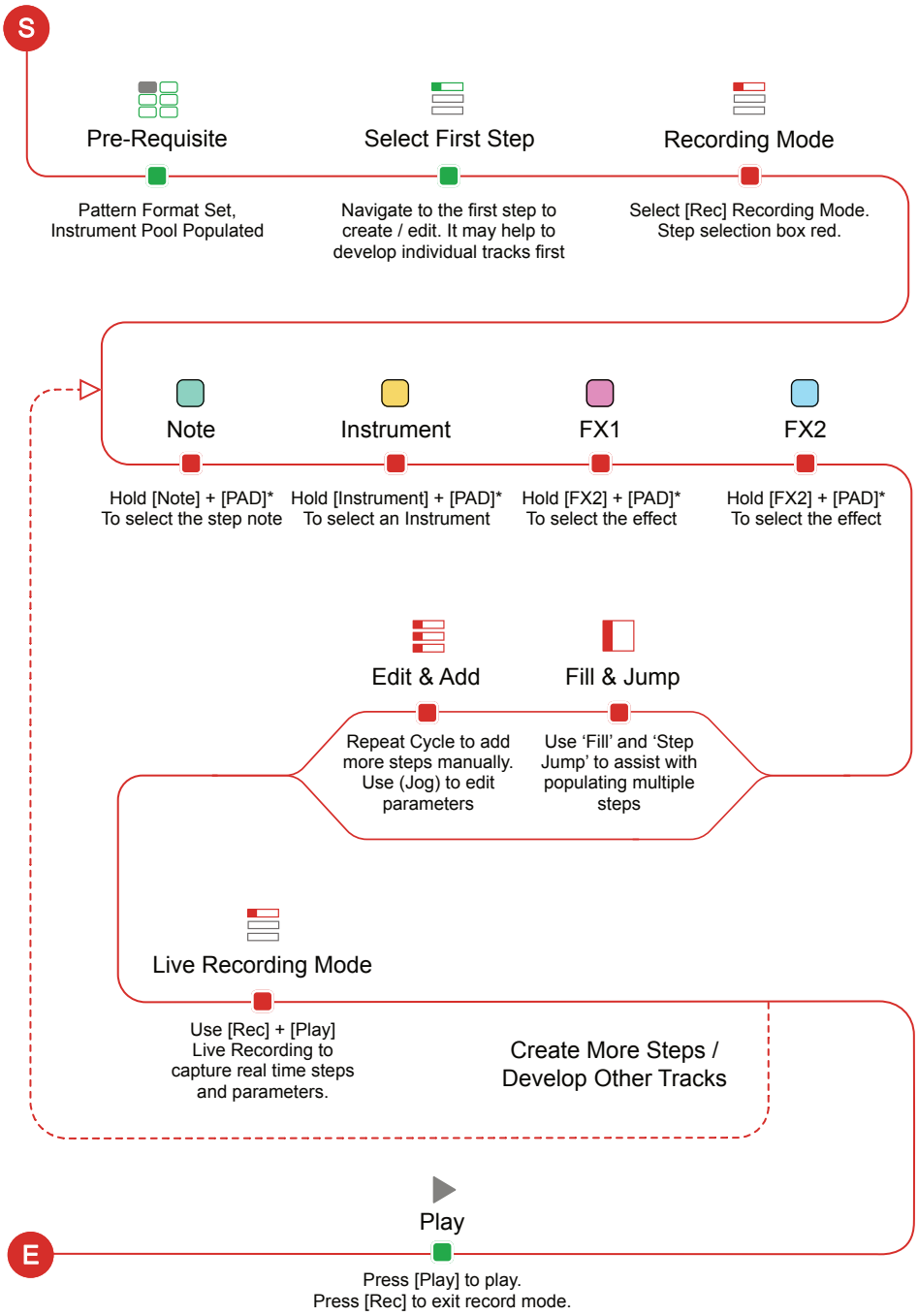
The step selection box will show solid colour on the selected option part.
Example: Note is shown highlighted here.

Note that sample based instruments can only be configured on Tracks 1-8. All tracks can use a synth or MIDI based instrument.

NOTES

5.2 Process of Creating a Step

Steps are sequenced in the Tracker+ each of which contains a Note, Instrument, and two FX slots options. It is good practice to structure these into tracks of relevance. For example kick drum on track 1, especially at the starting point.



* [PAD] or Turn (Jog)

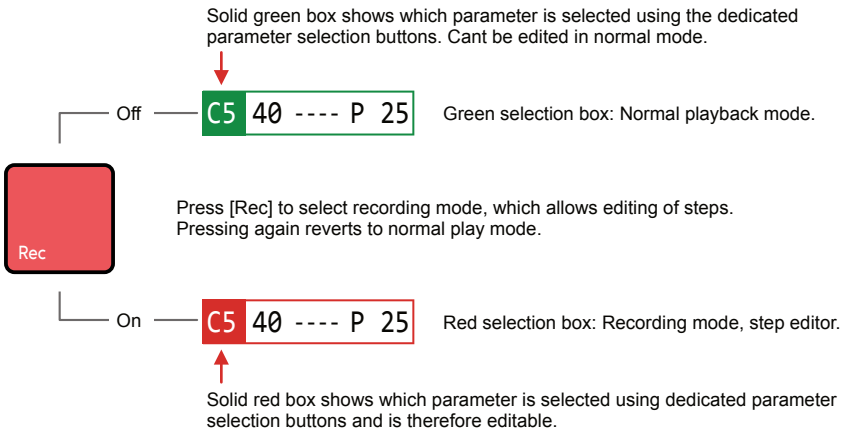
5.3 Recording Mode

NOTES

Steps are created by recording into the Pattern grid. There are two methods of recording steps, firstly by manually programming steps at desired intervals per track, some automated features will help in the workflow. Also real time live recording is possible using the 4 x 12 grid pads.

The selected step is navigated using the arrow keys and jog wheel. An active step will have at least one of the four; note, instrument, FX1, FX2 elements shown. The currently selected step will have a green bounding box displayed.

The selected step to edit in recording mode will be shown with a red bounding selection box. Note that navigation functions will become edit functions when in recording mode.



Quick Tap Dedicated Parameter Button to select specific parameter

TOGGLING RECORDING MODE ON/OFF

1. The default mode is for Tracker+ to play patterns and the currently selected step indicated by the green bounding box.

2. Press [Rec] to toggle between playback and recording mode. Recording mode is required to create, edit and configure steps in a pattern. The cursor bounding box is indicated red in recording mode.

3. (Jog) wheel navigation function will become an edit function in recording mode. Any selected parameter - solid colour, can be changed in recording mode with the jog wheel.

4. Hold the dedicated parameter button: Note, Instrument, FX1 or FX2 to temporary select for choosing an option or quick tap to lock selection.

NOTES

5.4 Manual Recording Steps

Steps can be added manually in Pattern Mode by navigating to a location and using the dedicated step parameter buttons. Pre-requisite is that the project instrument list is pre-configured with sample or synth instruments

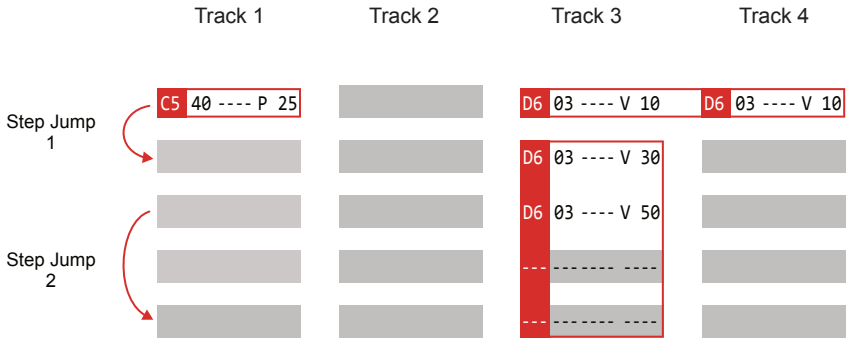
MANUALLY ENTERING AND EDITING A STEP

1. Press [Pattern] to select the Pattern Mode page. Start at Page 1.
2. Select the target step to edit. Use [Up], [Down] or Turn (Jog) to scroll top to bottom. Press [Left], [Right] to select a track. Example Row 1 of Track 1. The step should be highlighted with the green bounding box.
3. Press [Rec] to switch to recording mode.
4. Press [*Preview*] screen button on page 1 to listen to the step audio.
5. The Jog function will now change the selected parameter when in recording mode as opposed to purely navigation in normal play mode.
6. The step editing intervals will depend on the 'Step Jump' setting. Step Jump set to 0 will keep the current step active after adding, Set to 1 will move to the next row to allow faster population of a series of steps.
7. Hold the dedicated parameter keys + Pad / Jog / Arrows to set each of the step parameters. Tap the dedicated Parameter Button to lock its selection and avoid the necessity of keeping hold of the button:-
    - Note: Hold [Note] + [PAD] to set a note for the step.
      With the note already selected, Turn (Jog) to change it's value.
      Hold & release [Note] will set an empty step to default note i.e. C0.
    - Instrument: Hold [Instrument] + [PAD] to set from the sample instrument list. Also, Turn (Jog) to change and existing selection or to select a synth option. Hold & release [Instrument] will set the step to the existing selection.
    - FX1: Hold [FX1] + [PAD] to set the FX from the effect list.
      Also with [FX1] already selected, Turn (Jog) to change it's value.
    - FX1: Hold [FX2] + [PAD] to set the FX from the effect list.
      Also with [FX2] already selected, Turn (Jog) to change it's value.
8. Pressing a [PAD] will now record into a step, parameter and value.

NOTES

Manual Step Entry

Recording mode on to edit steps in the pattern



Steps can be added individually.
Example: Hold [Note] + [PAD] to select an option.

Subsequent steps are recorded when pressing pads. This will record iteratively the selected parameter into rows defined by the 'Step jump' intervals.

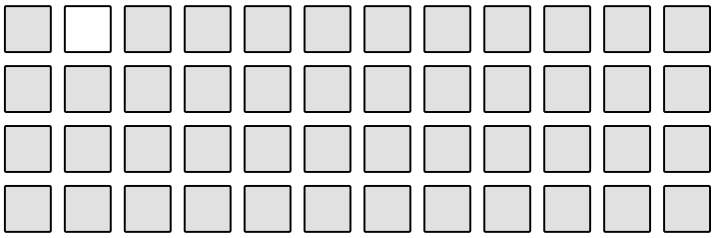
Select multiple step rows with [Shift] + [Up] or [Down]. Also across multiple tracks [Shift] + [Left] + [Down]

On the top row [Shift] + [Up] will select all steps in the track. Press [Shift] + [Up] + [Up] to select all steps.

Edits to any existing parameters can be made simultaneously, but only If a parameter is already set. These changes will be relative to the original value. Unassigned elements of a step will remain empty.

Playing [PAD] in recording mode will record the respective parameter value depending on 1) the parameter selected for the step and 2) the actual pad number chosen.

Example shows Pad 2 selected.



D6 03 ---- V 50	Note Selected, Pad 3 which represents D6.
D6 03 ---- V 50	Instrument Selected, Pad 3 which represents Instrument #3.
D6 03 ---- V 50	FX1 Selected, FX Effect not applied.
D6 03 ---- V 50	FX2 Selected, Pad 3 which represents effect #3 - Volume = 50.

Quick Tap Dedicated Parameter Button to lock the selection e.g. [Instrument]

NOTES

Steps can be added edited collectively too. Select a range within a track or across tracks to edit.

MANUALLY EDITING A RANGE OF STEPS

1. Press [Pattern] to select the Pattern Mode page.
2. Select the target step to edit. Use [Up], [Down] or Turn (Jog) to scroll top to bottom. Press [Left], [Right] to select a track. Example Row 1 of Track 1. The step should be highlighted with the green bounding box.
3. To select steps.
   - Defined range. Press [Shift] + [Left] or [Right] to select across tracks and [Shift] + [Up] or [Down] to select rows, expanding the range.
   - All steps for a track. Move cursor to the top step on the track to select, then Press [Shift] + [Up].
   - All steps in the pattern. Select the top step on a track, then Press [Shift] + [Up] + [Up].
4. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow editing of the collective step range.
5. Press [*Preview*] screen button, to play only the range of selected steps. Also press a [PAD] to preview.
6. The Jog function will now change the selected parameter when in recording mode as opposed to purely navigation in normal play mode.
7. Select a parameter to edit. Only existing parameters can be changed. Any empty parameter slots will not change and remain open.
   - To select Note: Hold [Note] + Select, or Tap [Note] to lock.
   - To select Instrument: Hold [Instrument] + Select or Tap [Instrument] to lock selection of parameter.
   - To select FX1: Hold [FX1] + Select or Tap [FX1] to lock selection.
   - To select FX1: Hold [FX2] + Select or Tap [FX2] to lock selection.
8. Turn (Jog) to adjust the parameter value of the selected parameter within the step. Selected parameter will be solid coloured red. When adjusting simultaneous values they will each change relative to the original value.

NOTES

COPYING AND PASTING STEPS AND STEP RANGES

1. Press [Pattern] to select the Pattern Mode page.
2. Navigate to select a Step. Also Press [Shift] + [Left] or [Right] and [Shift] + [Up] or [Down] to select tracks and rows.
3. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow copying of the step or collective step range.
4. Press [Copy / Paste] button. The selected step or step range will be copied to the clipboard.
5. Relocate the cursor to the first step in which to paste by using [Up], [Down], [Left] or [Right].
6. Press [Shift] + [Copy / Paste] button. The copied step or step range will be pasted into the selected step and the relative range. Undo and Redo can be used if needed.

DELETING STEPS AND STEP RANGES

1. Press [Pattern] to select the Pattern Mode page.
2. Navigate to select a Step. Also Press [Shift] + [Left] or [Right] and [Shift] + [Up] or [Down] to select tracks and rows.
3. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow copying of the step or collective step range.
4. Press [Delete / Backspace] button. The selected step, if note or instrument is selected, will be deleted. If FX1 or FX2 is only selected then the effect alone is deleted.
5. MIDI values are not cleared when deleting a note, but can be deleted when the instrument parameter is selected.

COPY / PASTE AN ENTIRE PATTERN

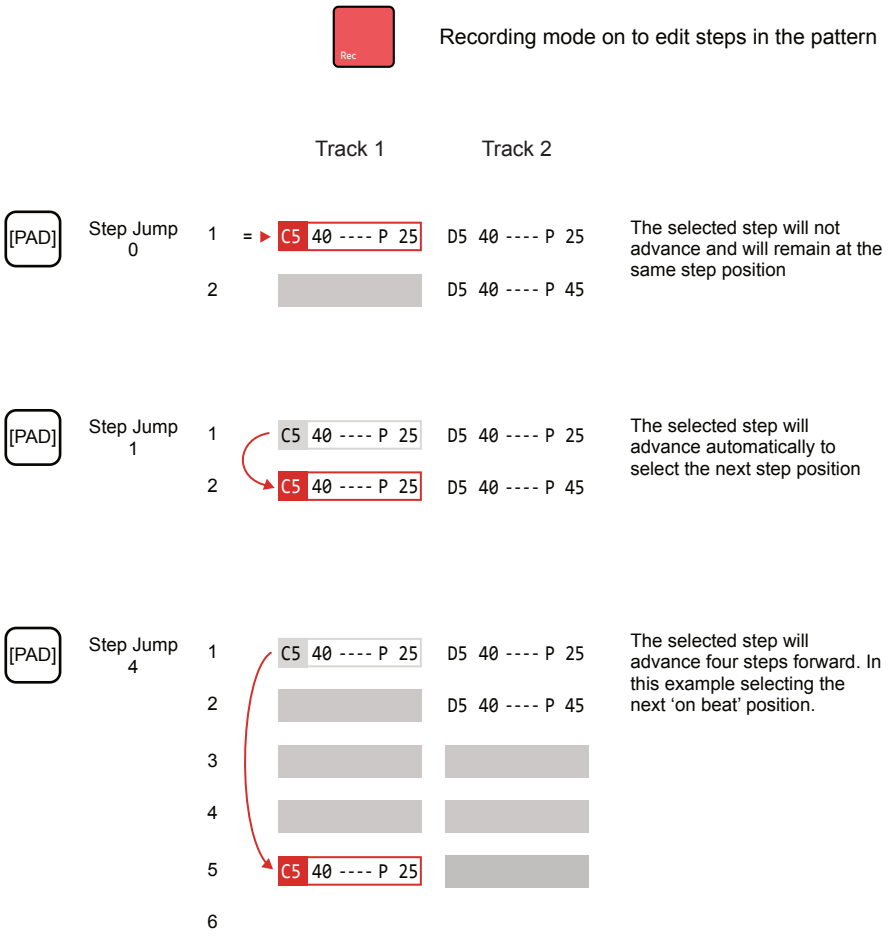
1. Press [Pattern] to select the Pattern Mode page.
2. Hold [Pattern] + [Copy / Paste] to copy the current pattern.
3. Select a new pattern, Press [Pattern] + [Up] or [Down]
4. Hold [Pattern] + [Shift] + [Copy / Paste] to paste into the current pattern.

NOTES

5.5 Step Jump Recording Multiple Steps

When steps are added using a [PAD] the active step is automatically advanced to the next step when complete. The intervals for this are based on the 'Step Jump' feature. This is useful for creating patterns with defined intervals and speeding up workflow.

Step Jump Examples



The Step Jump setting is useful when populating specific intervals, for example each on beat step or each off beat step or alternate steps for percussion. This speeds up the workflow and helps in creating interesting sequences.

NOTES

ENTERING STEPS WITH STEP JUMP

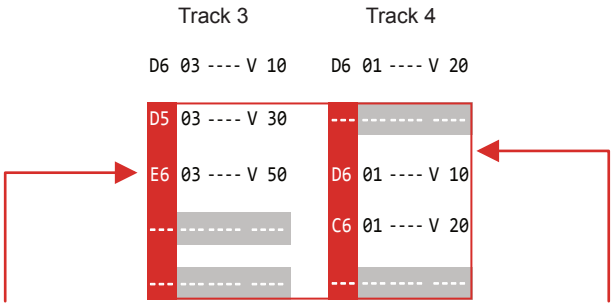
1. Press [Pattern] to select the Pattern Mode page.
2. Navigate to select a Step.
3. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow steps to be added.
4. Hold [*Step Jump*] screen button + Turn (Jog) or Press [PAD]. Set the value to the step jump interval required.
5. Pressing a [PAD] will enter a step and advance the active step by the value set in the ‘Step Jump’ setting.
6. Continue to press [PAD] to add more steps and advance by the set interval or edit the current step manually.

NOTES

5.6 Fill Recording Multiple Steps

The 'Fill' function allows a more elaborate and detailed population of step ranges. This speeds up workflow by helping to create batches of steps with defined criteria automatically applied. Also Fill is a very creative tool for generating melodies and beats and experimenting with patterns.

It is possible to fill ranges that already contain steps, contain empty steps or a mix of both. The fill operates within the selected range and ignores the Step Jump parameter.



Fill Parameter
The selected parameter will be the element to be filled.
Example: Illustration shows Note selected

Range To Fill
Fill will populate a selected range of steps based on the fill criteria applied.
Example: Illustration shows 2 Tracks, 4 rows.

ACCESSING THE FILL UTILITY

1. Press [Pattern] to select the Pattern Mode page.
2. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow editing of steps.
3. Select a range of steps: Hold [Shift] + [Up], [Down], [Left] or [Right]
4. Ensure the step parameter to populate is selected: Press [Note], [Instrument], [FX1] or [FX2]. The parameter will be highlighted solid red.
5. Press [*Fill*] screen button. This will open the Fill utility pop-up window and be ready to select the criteria to apply to the selected step range and its selected parameter.

NOTES

Fill Utility Window

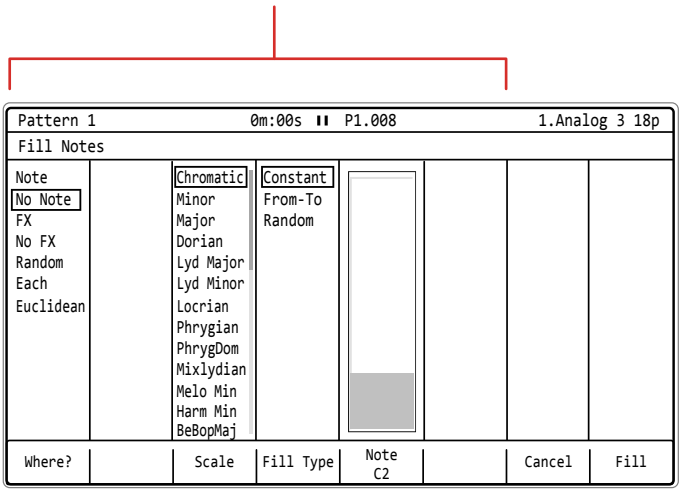
The window layout is similar for the step range and parameters selected. However the content and features for fill will change depending on the context of the selection and the options chosen. A typical Fill window is shown below with a summary of common features. The Fill utility is mainly controlled using the dynamic screen buttons under the Tracker+ screen.

To access Fill:-

Press [*Fill*] - Screen Button, when in [Rec] Mode of the [Pattern] Page.

Dynamic area of 5 features containing the criteria specifically required for 1) Parameter selected, 2) Step range selected and 3) Options chosen in 'Where' & 'Fill Type'.

Example Illustration shows a range of notes selected with the 'note' and 'constant' selections.



Where?
Option of where to apply the fill within the selected step range.

Example: Note would apply a note fill to all steps containing a note.

Cancel
Exist without applying.

Fill Type
Option of how to apply the parameter within the selected step range.

Example: Constant would apply a constant note value C2 into the range.

Fill
Activates the fill command. Applies defined criteria into the selected range.

Ensure a range of steps is selected and the step parameter also selected before opening the Fill utility. This range and parameter will be what determines the fill application.

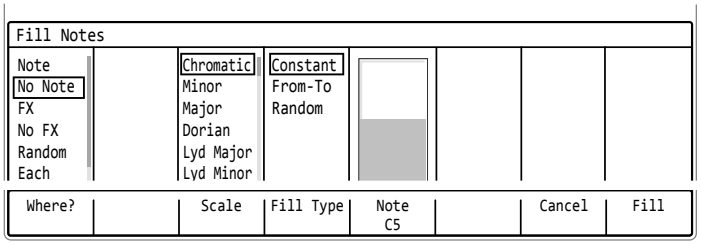
NOTES

Example of using a basic Fill

As a quick start introduction to creating fills and example to populate an empty range with notes followed by filling the FX1 for the series of notes with a pan variation effect. This will play a percussion segment,

CREATING A NOTE FILL

1. Press [Pattern] to select the Pattern Mode page.
2. Press [Instrument] and select a percussive sound. The ‘606-ClosedHat’ sample has been loaded into the project instrument list and will be used for this example.
3. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow editing of steps.
4. Select a range of empty steps: Hold [Shift] + [Up], [Down], [Left] or [Right]. For this example select 8 step rows on a single track. The option for selecting multiple rows and tracks is possible.
5. Ensure the notes step parameter is selected in the pattern range selected: Press [Note], which will be highlighted solid red.
6. Press [*Fill*] screen button. This will open the Fill utility window.
7. Press [*Where?*] screen button. Repeat presses will cycle through the options. Also, with the ‘Where?’ section highlighted, [Up], [Down] or Turning (Jog) will select options.



NOTES

8. Select in the bounding box ‘No Note’. This option will select all steps that do not have a note set. As the selected range is empty all 8 steps will be filled with this option.

9. Press [*Scale*] screen button. Repeat presses will cycle through the options. Select ‘Chromatic’. As this is a percussion instrument the scale is less important.

10. Press [*Fill Type*] screen button. Repeat presses will cycle through the options. Select ‘Constant’. As this is a percussion pattern the instrument does not require scale or note ranges so constant will repeat the note.

11. Press [*Note*] screen button. Repeat presses will cycle through the options. The quickest method here is to Hold [Note], then Press [PAD] or Turn (Jog) to assign a note. Set to C5, the root note for the sample.

12. Press [Fill] screen button. This will activate the fill command and populate the selected range.

NOTES

ADDING THE PAN VARIATION USING FILL

1. Following from the previous example; In [Pattern] with [Rec] Mode On, ensure the previous step range is still selected.

2. Press [FX2]. This selects the effect column FX2 which is highlighted solid red.

3. Press [*Fill*] screen button. This will open the Fill utility window. The display will now be different as the fill utility is now FX, not Note Fill.

4. Press [*Where?*] screen button. Repeat presses will cycle through the options. Also, with the 'Where?' section highlighted, [Up], [Down] or Turning (Jog) will select options.

5. Select in the bounding box 'Note'. This option will select all steps that have a note set. This is effectively the range of notes recently created.

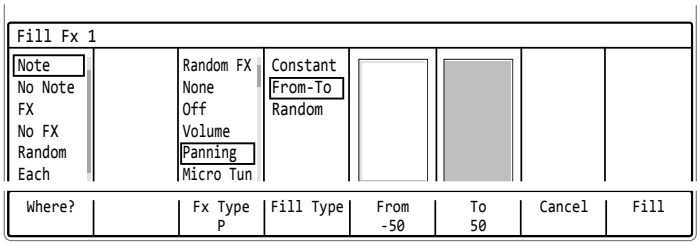
6. Press [*Fx Type*] screen button. Repeat presses will cycle through the options or [Up] or [Down] or (Jog). Select 'Panning', as the effect to fill into the selected range.

7. Press [*Fill Type*] screen button. Repeat presses will cycle through the options. Select 'From-To' to allow a range of pan values to be filled.

8. Hold [*From*] screen button + [PAD] or Turn (Jog) to assign a value. Set this to -50.

9. Hold [*To*] screen button + [PAD] or Turn (Jog) to assign a value. Set this to 50.

10. Press [Fill] screen button. This will activate the fill command and populate the selected range. This will create a percussive pattern which will pan left to right in the stereo image. The values are automatically assigned in equal intervals across the range.

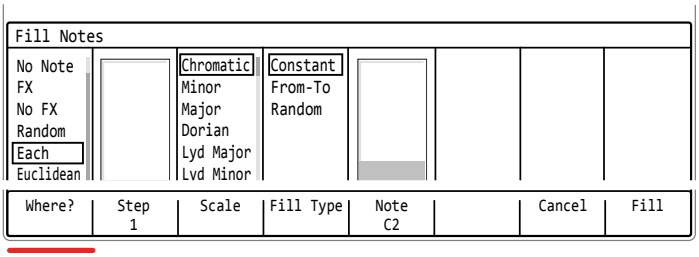


NOTES

Fill Utility Generic Page Parameter - Where.

The Fill utility will present options respective to the selected step parameter. If for example an FX parameter is selected in a range, then the fill utility will represent FX Fills. Some elements like ‘Where?’ and ‘Fill Type’ are generic.

Where?



The ‘Where?’ option determines where in the selected step range the fill steps and defined parameters will be placed. This will fill new steps into the steps in the range which are empty, already filled or both depending on the selected option.

Option	Sub - Option	Description
Note	-	Will populate only steps in the selected range where a note already exists, overwriting the original value.
No Note	-	Will populate only steps in the selected range where no note exists, ie blank note steps
FX	-	Will populate only steps in the selected range where an FX parameter already exists, overwriting the original value.
No FX	-	Will populate only steps in the selected range where no FX parameter exists, ie blank FX steps
Random	-	Will populate steps in the selected range randomly for both existing and blank steps. Density is a related option.
Random	Density	Density parameter controls, in percentage how much of the range is filled when the ‘Random’ option is selected.
Each	-	Populates steps in the range with a defined step interval which ranges from 1-32. Step is a related option.
Each	Step	Step parameter controls the intervals of evenly distributed step fills when the ‘Each’ option is selected
Euclidean	-	Generates rhythmic patterns within the range based on the population of 1-32 events. Event is a related option.
Euclidean	Event	Events determine how the steps and intervals are generated with respect to the selected step length.

NOTES

Euclidean Patterns

Euclidean patterns are a more creative fill ‘where’ function. While the other options perform a population based on structure, Euclidean option aims to be more creative in generating musical sequences. Euclidean patterns are generated based on a mathematical model where the steps and intervals determine a pattern melody. Tracker+ uses ‘events’ and the step length to calculate the steps and intervals.

Consider the following formula as rough guide for Euclidean filled patterns. Steps will be ‘rounded’ to the nearest step location to spread as ‘evenly’ as possible within the event and length constraints.

Formula: Step Length / Euclidean Event Setting

Examples:

8 Steps in the Length, Event = 4.

Track 4

1	D6	03 ---- V 10
2	---	-------- ----
3	D6	03 ---- V 10
4	---	-------- ----
5	D6	03 ---- V 10
6	---	-------- ----
7	D6	03 ---- V 10
8	---	-------- ----

8 Steps in the Length, Event = 5.

Track 4

D6	03 ---- V 10
---	-------- ----
D6	03 ---- V 10
D6	03 ---- V 10
---	-------- ----
D6	03 ---- V 10
D6	03 ---- V 10
---	-------- ----

8 Steps in the Length, Event = 7.

Track 4

D6	03 ---- V 10
D6	03 ---- V 10
D6	03 ---- V 10
D6	03 ---- V 10
---	-------- ----
D6	03 ---- V 10
D6	03 ---- V 10
D6	03 ---- V 10

4 Steps in the Length, Event = 3.

Track 4

1	D6	03 ---- V 10
2	D6	03 ---- V 10
3	---	-------- ----
4	D6	03 ---- V 10
5		

5 Steps in the Length, Event = 2.

Track 4

D6	03 ---- V 10
---	-------- ----
D6	03 ---- V 10
---	-------- ----
---	-------- ----

3 Steps in the Length, Event = 2.

Track 4

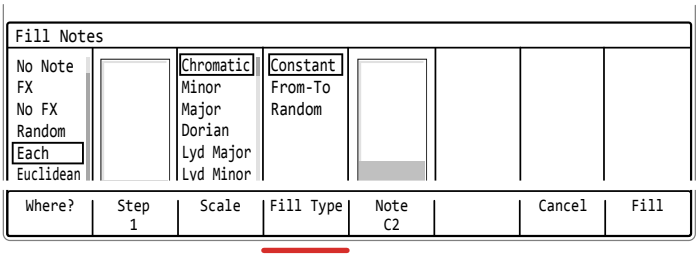
D6	03 ---- V 10
D6	03 ---- V 10
---	-------- ----

NOTES

Fill Utility Generic Page Parameter - Fill Type.

The ‘Fill Type’ option is another generic parameter in the Fill Utility and concentrates on range of fill values.

Fill Type



The ‘Fill Type’ option operates on the parameter value and determines how the fill parameter is applied into the selected step range. This will fill the parameter as an individual repeated element, be based on a range of values or randomise the step parameters.

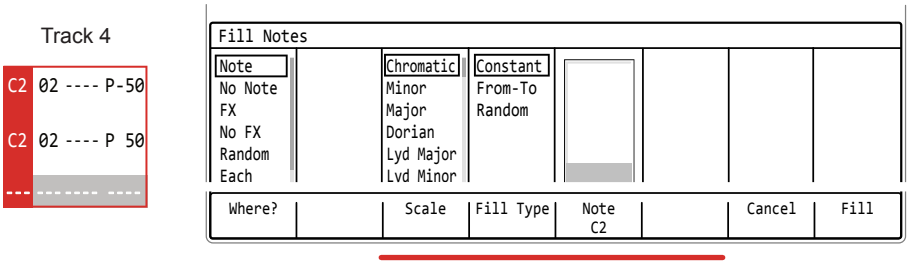
Option	Sub - Option	Description
Constant	-	Populates the steps applied with fixed singular parameter value as stated with Note, Instrument or FX
Constant	Note, Instrument or FX	Sets the parameter value to be applied when filling steps. This will differ depending on Note, Instrument, FX
From-To		Populates the steps applied with multiple parameter values distributed across the defined range
From-To	From	Starting point for the parameter value range which will be used to fill the steps range.
From-To	To	End point for the parameter value range which will be used to fill the steps range.
Random		Populates the steps applied with multiple random parameter values distributed across the defined range
Random	From	Starting point for the parameter value range which will be used to randomly fill the steps range.
Random	To	End point for the parameter value range which will be used to randomly fill the steps range.

NOTES

Fill Notes

Filling a selected range will also be based on the parameter selected. When the step range is selected the fill parameter options will reflect the parameter selected in the range.

Fill Notes



When Notes are selected the note scale will be available for the notes that will be filled into the range. The notes will be constant, random or between the from-to range.

Scale	Scale Label
Chromatic	Chromatic
Minor	Minor
Major	Major
Dorian	Dorian
Lydian Major	Lyd Maj
Lydian Minor	Lyd Min
Locrian	Locrian
Phrygian	Phrygian
Phrygian Dominant	PhrygDom
Mixolydian	Mixlydian
Melodic Minor	Melo Min
Harmonic Minor	Harm Min
BeBop Major	BeBopMaj
BeBop Dorian	BeBopDor
BeBop Mixolydian	BeBopMix
Blues Minor	Blues Min
Blues Major	Blues Maj
Pentatonic Minor	Penta Min
Pentatonic Major	Penta Maj
Hungarian Minor	Hung Min

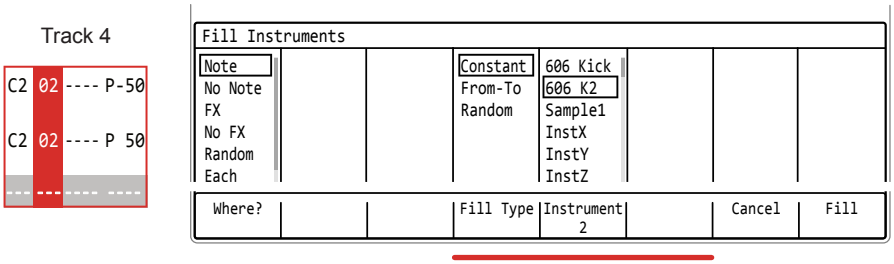
Scale	Scale Label
Ukranian	Ukranian
Marva	Marva
Todi	Todi
Whole Tone	Wholetone
Diminished	Dim
Super Locrian	SLocrian
Hirajoshi	Hirajoshi
In Sen	In Sen
Yo	Yo
Iwato	Iwato
Whole Half	WholeHalf
Kumoi	Kumoi
Overtone	Overtone
Double Harmonic	DoubleHarm
Indian	Indian
Gypsy Minor	GypsyMin
Neapolitan Major	NeapoMaj
Neapolitan Minor	NeapoMin
Enigmatic	*Not used for Fill*

NOTES

Fill Instruments

When the instrument parameter is selected in the range, the fill will apply instrument fills. This is based on the project instrument pool.

Fill Instruments

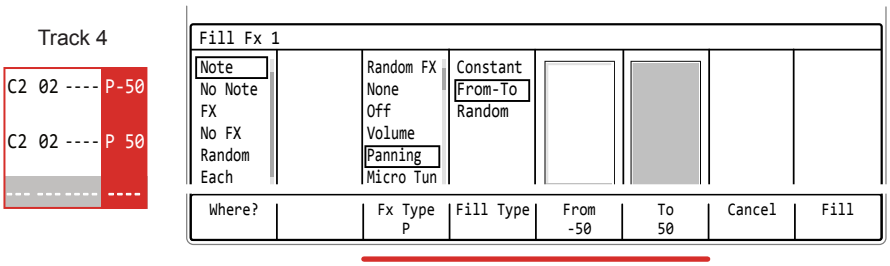


When Instruments are selected the instrument pool for the project is presented. It is also possible with From-To or Random Fill Type to populate the steps with multiple instruments across a variety of steps.

Fill FX

When either of the FX parameters is selected in the range, the fill will apply FX fills. This is based on the effects FX list available within Tracker+.

Fill Instruments



When any of the two FX are selected the Tracker+ effect list is presented as 'Fx Type'. The selected effect character is shown under the name. It is also possible with From-To or Random 'Fill Type' to populate the range of steps with variations for the FX value setting.

NOTES

5.7 Live Recording Steps

Live recording offers an alternative to manual recording when programming steps into a sequence. Each method fits to certain applications better than others. Manual step recording is useful building complex and precise melodies and arrangements. Live recording is good for repetitive and natural sequences. As always this will be based on individual taste and a fit to personal workflow preferences.

Live recording allows steps to be placed in real time while the sequencer loops enabling multiple cycles of steps to be recorded.

Live Recording Considerations:-

- It is often useful to set the metronome to on, found in the Config menu when live recording to aid the timing.
- Recordings can be edited afterwards using the editing tools and process as described with manual recording. Live recording is useful to grab quick sequences and edit for accuracy afterwards.
- Recording uses the grid pads just like a drum machine or a keyboard. The pads are not velocity sensitive so will record at fixed velocity. Use an external MIDI Keyboard for recording velocity.
- The habit of arming tracks is helpful. Armed tracks can be recorded. By default tracks will shift recording to the next right track step if the active step being recorded coincides with an existing step.
- Quantization settings are in the config menu under ‘Recording options’. Micro moves, slightly nudge and offset the note timing and can also be live recorded.

Tip: The technique of reducing the project tempo for live recording can be helpful in capturing more precise musical and rhythmic patterns at a slower rate. Turn the tempo back to it’s normal setting once the pattern has been recorded.

NOTES

PREPARING FOR LIVE RECORDING

A number of settings are available when recording live. These are optional depending on circumstances.

- Set the Metronome On/Off: Config > Metronome: State = On.
- Set the Pre roll count in On/Off: Config > Metronome: Pre roll = On.
- Set Quantize: Config > General > Recording Options
- Arm or Disarm a track to allow recording:-
  Hold [Shift] + [Rec] + Screen Button to toggle arm/disarm per track. Note that only arming the target track to record to will avoid steps being recorded to adjacent tracks when steps are occupied.
- Ensure the Note parameter is highlighted which will allow recording steps. If the Instrument or FX is highlighted by default, then these will be recorded.
- Hold [Instrument] + Turn (Jog) or Press [PAD] to set a default instrument to record.

SETTING QUANTIZE RECORDING OPTIONS

1. Press [Config] to select the settings options.
2. In the left window, Turn (Jog) to highlight ‘General’.
3. Press [Right] to select the ‘General’ sub menu.
4. In the central window sub menu, scroll using (Jog) to select ‘Recording Options’. These will determine the quantize for recording:-
   - Only Notes: Quantize notes only.
   - Microtiming: Will record a nudge or offset as it is played by recording as a ‘Micro-move’ FX value in the step. Delete these FX to revert to quantized values.
   - Velocity: Record velocity at a fixed value with pads. Use an external MIDI Keyboard to record in real time velocity values. Velocity is recorded as an FX value.
   - Microtiming + Velocity. Record into both FX the fixed velocity and real time microtiming values.

NOTES

REAL TIME LIVE RECORDING A PATTERN

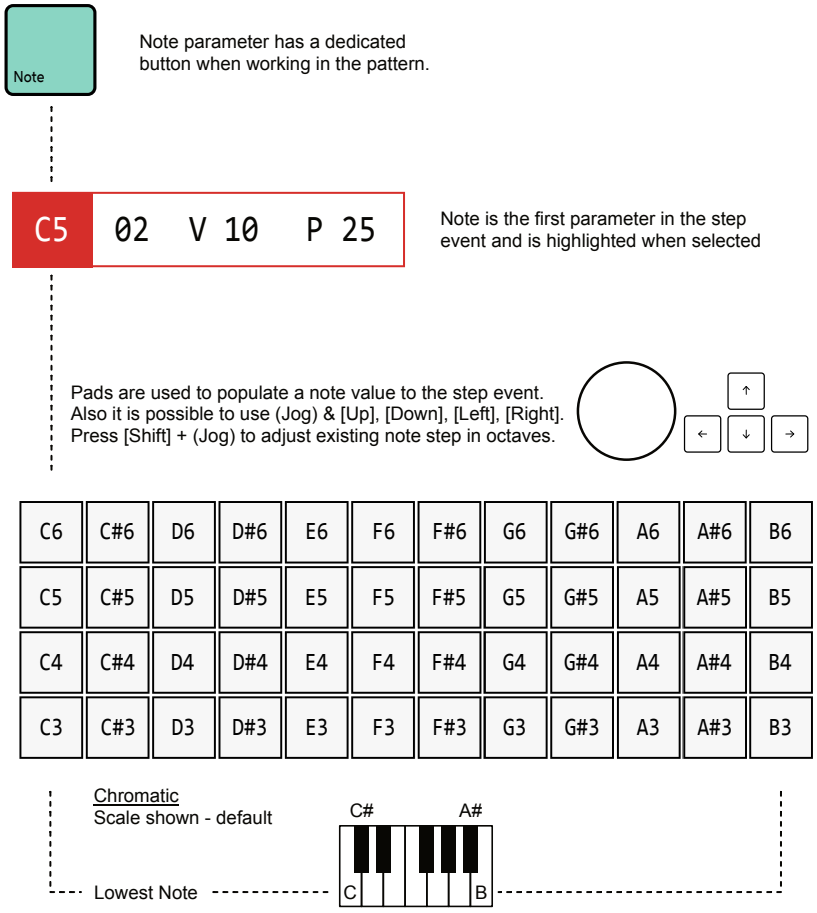
1. Press [Pattern] to select the Pattern Mode page.
2. Hold [Instrument] + Turn (Jog) or Press [PAD] to select the instrument to record. The Note will be live recorded with pads.
3. Press [Rec] + [Play] to start live recording mode. The sequencer will start immediately or after a count in of 4 if ‘Pre roll’ is set on.
4. Press [PAD] in real time to record. The pad note will be recorded along with the default instrument selected. Notes are recorded along with a ‘Note Off’ value.
5. To change optionally to instrument or FX recording, Press [Instrument] or [FX] during live recording. A ‘Note Off’ value is not recorded with these options.
6. Steps will be recorded into the current track. Notes will not be overdubbed. Any recording that coincides with an existing note will by default be recorded into the step row on the next track right. This behaviour is dependant on arming of tracks.
7. Press [Rec] to leave recording mode but to continue playing.
8. Press [Play] to stop playback.

5.8 Note Steps

NOTES

One of the four components of a step event is a Note. This may be a musically scaled note or a note assigned to a sample or slice. Essentially note controls a single note pitch in the step event for the instrument.

Note Summary

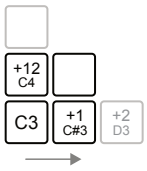


The notes value are mapped across the pads. Starting at C3 bottom left, by default and pad top right, ends at B6. This therefore covers four octaves.

The Notes layout can be changed in the 'Config' Menu.
Three key parameters are important when changing note layout for pads:-

Pads Layout - Default = 12
Found in Config > Project Settings
In semitones for pad directly above root

Pads root note - Default = C3
Found in Config > Project Settings



Pads Scale - Default = Chromatic
Found in Config > Pads Scale
A full list of available scales is shown in the description for the fill utility.

NOTES

DETAILED APPLICATION OF A NOTE VALUE TO A STEP EVENT

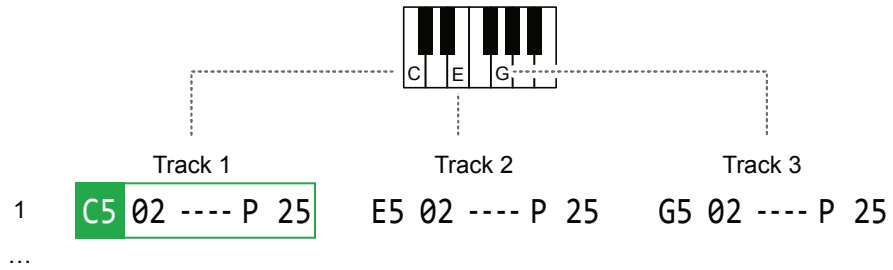
1. Press [Pattern] to select the pattern mode page.
2. Select a blank or existing step event.
3. Press [Note] to ensure the note parameter is selected in the step event. This is a short press - do not hold [Note] otherwise this will only temporarily select the parameter while being held.
4. Select recording mode, Press [Rec]. The steps selected will appear red as opposed to green when in normal playback mode.
5. Set a Note by either:-
   - Press [PAD] to select the note based on the note assigned to the pad selected. Will not display note screen. Pressing [PAD] will also iterate steps based on 'Step Jump' setting. *Fastest Method*.
   - Hold [Note] + [PAD]. The pad selected will refer to the note applied. The pads are laid out based on settings in the config settings but default is Chromatic, C3 - B6. *Fast & Most Accurate Method*.
   - Hold [Note] + Press [Up] or [Down], [Left] or [Right]. Navigation and selection is shown on the note screen. Release [Note] to select. *Accurate, But Slower Method*
   - Hold [Note] + Turn (Jog). Adds a note value to the step. Navigation is displayed on the pad note screen. *Accurate But Slowest Method.*
   - Hold [Note] alone, until pad notes are displayed and then release [Note] to apply C0 to the step event. Applied to empty steps only. Note can be edited later if required. *Quick but Inaccurate Method.*
6. The note will be added, displayed with teal coloured text. Notes are always added along with the currently selected instrument. Notes can be edited once created with (Jog) or [Shift] + (Jog) to change note by full octaves.

Pads can be used to play live samples both using instruments and when controlling external gear via MIDI from the pattern page. When in REC mode - red state, the entire step is played including FX and respective BPM. When in the Green, none recording mode will only play the note and instrument.

NOTES

Polyphony & Chords

Each track in Tracker+ can handle one voice which can play multiple notes, but not simultaneously. This can be a limitation when creating chords which would need a track per note. A triad would need 3 tracks to play the chord.



As a work around the tracks can be rendered to a new audio sample and reduce the track usage down. This re-sampling method can also be used to render into an audio file when FX slots are full.

RENDERING TRACKS TO AUDIO CHORDS

1. Press [Pattern] to select the pattern mode page and Press [Rec] to select record edit mode.

2. Hold [Shift] + [Up], [Down], [Left], [Right] to select the range to render. For example, select across all the tracks making up the chord and the pattern duration of 16 steps

3. Press [*More*] screen button to select more pattern options.

4. Press [*Render Selection*], screen button.

5. The naming page appears. A name can be edited or press [*Auto Name*], screen button to automatically apply a name.

6. When the name is entered, Press [*Render & Load*] screen button. This option will not only render the audio but also automatically load the sample into the instrument list. The pattern will halt playback if playing.

7. When the file has been ‘exported’, the instrument list will open ready to preview or select the sample exported.

8. Press [Pattern], to return to the pattern page. Now replace the instrument on a track with the rendered chord sample. Ensure the note is set to the same default for the sample playback, example C5.

9. Remove the other track samples to free them up.

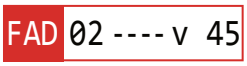
NOTES

Special Note Commands

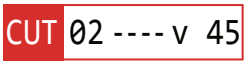
Three special note commands can be applied instead of the actual note value. These are not used for applying a note sound, but are used for controlling how a note ends. These include CUT - Immediately silences the audio, FAD - Fades out audio gradually and OFF - Triggers Note Off for the envelope and starts the release phase.

To access these options, while 'Note' is selected, Turn (Jog) fully counter clockwise to access the 3 commands.

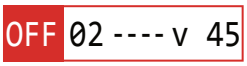
FAD - Fade.
Will gradually reduce the audio sound and fade it out. Also will turn MIDI Notes off.



CUT - Cut.
Will immediately stop the audio sound. Also will turn MIDI Notes off.



OFF - Off.
Will act as 'Note-Off' and trigger the release phase of the envelope to reduce the sound.

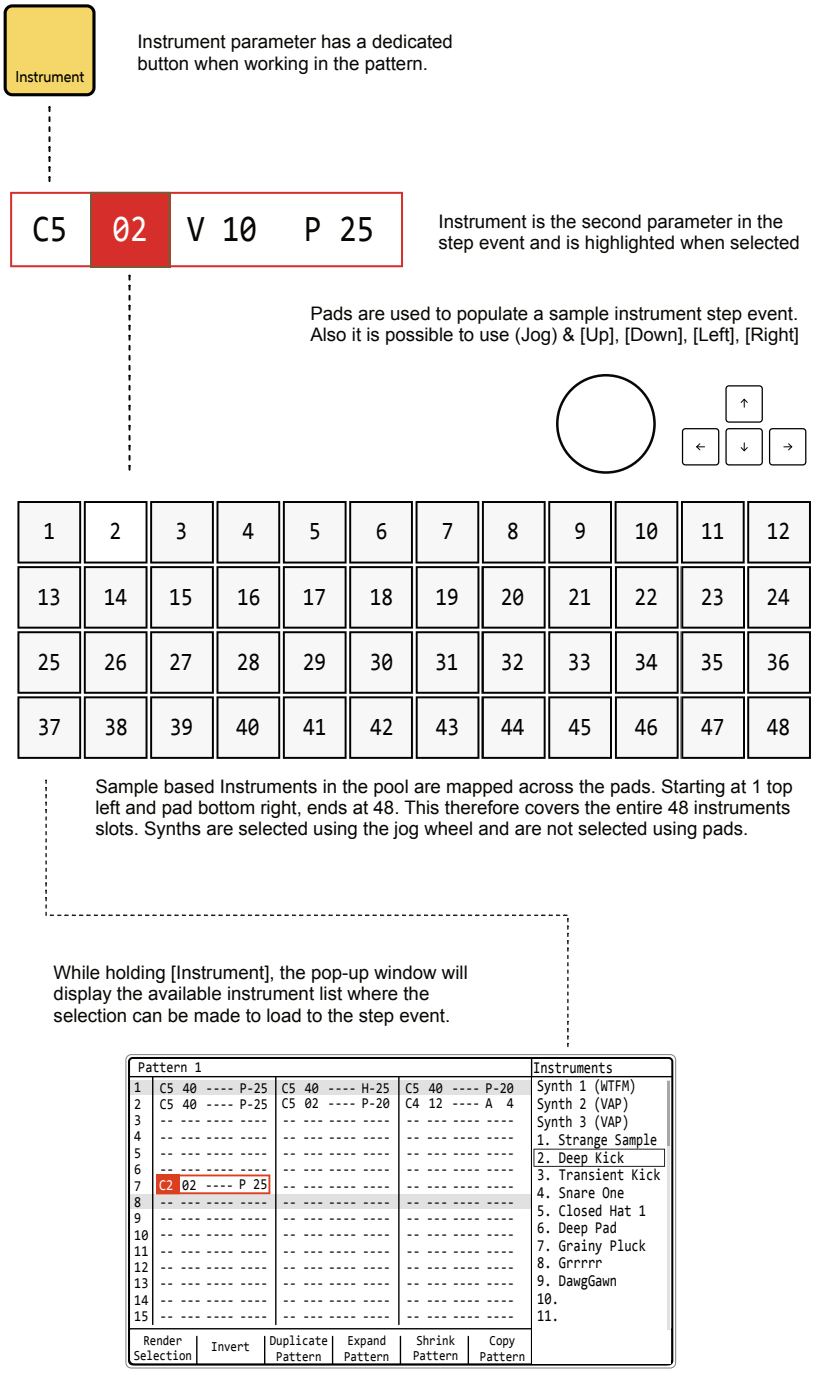


5.9 Instrument Step Parameters

NOTES

Each step event has an instrument which is based on a synth, a sample, either raw or edited or a sample formed into a granular or wavetable instrument. Any instrument added to the 48 instrument pool is available to be added to a step.

Instrument Summary



NOTES

DETAILED APPLICATION OF AN INSTRUMENT TO A STEP

1. Press [Pattern] to select the pattern mode page.

2. Select a blank or existing step event.

3. Press [Instrument] to ensure the instrument parameter is selected in the step event. This is a short press - do not hold [Instrument] otherwise this will only temporarily select the parameter while being held.

4. Select recording mode, Press [Rec]. The steps selected will appear red as opposed to green when in normal playback mode.

5. The process may differ is selecting a synth or a sample based instrument from the list. Assign an Instrument by either:-

    - Press [PAD] to select the sample instrument based on the number for the pad selected. Pressing [PAD] will also iterate steps based on 'Step Jump' setting. *Fastest Method*.

    - Hold [Instrument] + [PAD]. The pad selected will refer to the sample instrument applied. The pads are laid out 1-48 representing the sample instrument pool slots. *Fast & Most Accurate Method*.

    - Hold [Instrument] + Turn (Jog). Select a sample or a synth based instrument from the list. Navigation is displayed on the pads where applicable. *Accurate and Quick Method.*

    - Hold [Instrument] + Press [Up] or [Down] to highlight synth or sample instrument slots, [Left] or [Right] to scroll up/down in bigger iterations. Navigation and selection is shown on the pop-up screen. Release [Instrument] to select. *Accurate, But Slower Method*

    - Hold [Instrument] alone, until instruments are displayed and then release [Instrument] to apply the selected synth or sample instrument. Note can be edited later if required. *Quick but Inaccurate Method.*

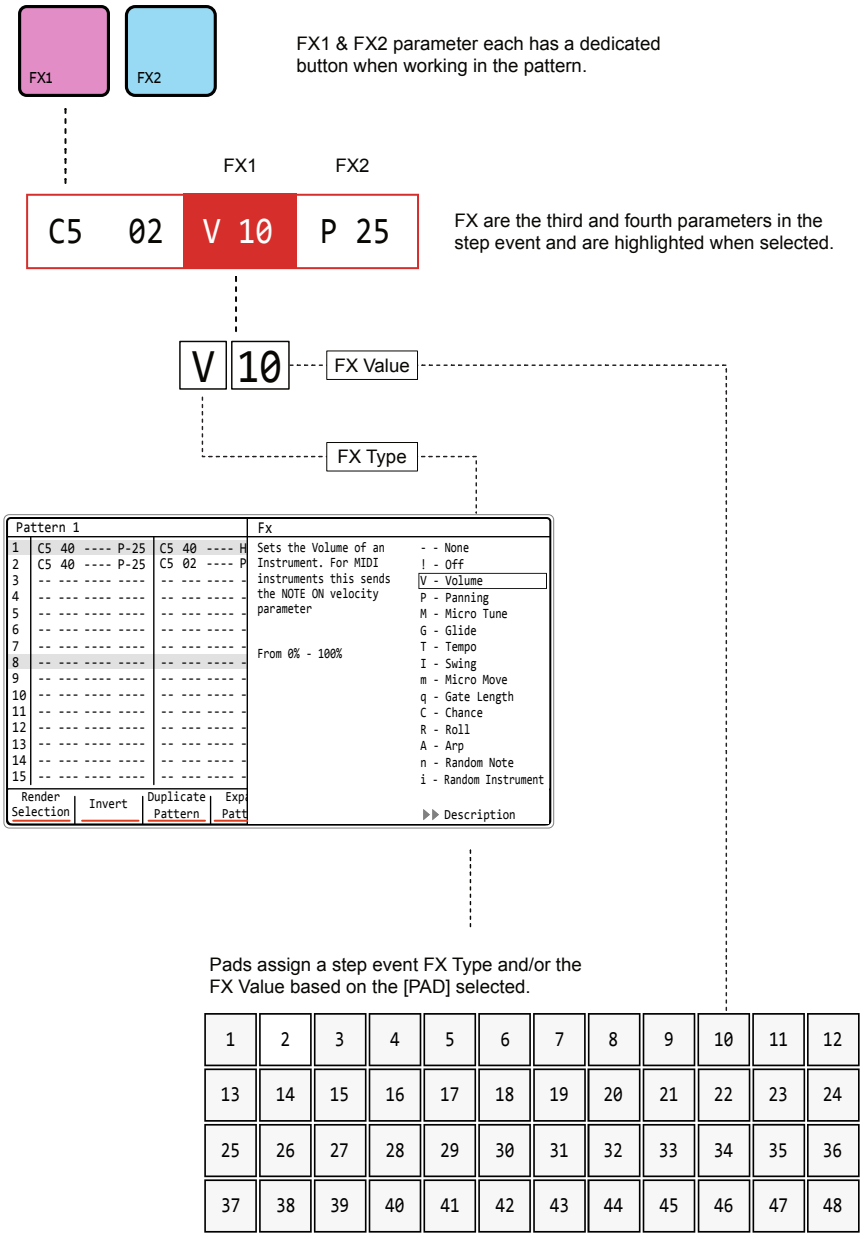
5. The instrument will be added, displayed with amber coloured text. Sample Instruments are always added with a note. Synths added alone.

5.10 FX Step Parameters

NOTES

Each step event has two FX slots which can be populated from a library of effects. Each FX has two parts, firstly the effect type, represented by a single character and secondly it's value.

FX Summary



Pads are used to populate an FX step event. Also it is possible to use (Jog) & [Up], [Down], [Left], [Right]

NOTES

DETAILED APPLICATION OF AN EFFECT TO AN EMPTY STEP

1. Press [Pattern] to select the pattern mode page.
2. Select a blank or existing step event.
3. Press [FX1] or [FX2] to ensure the FX parameter is selected in the step event. This is a short press - do not hold [Instrument] otherwise this will only temporarily select the parameter while being held.
4. Select recording mode, Press [Rec]. The steps selected will appear red as opposed to green when in normal playback mode.
5. To assign FX either:-
   - Press [PAD]
     - If the step is empty it will apply both the chosen FX and also it's value which is based on the pad selected.
     - If the step is occupied, the existing FX type is retained but a value represented by the pad selected will be applied.
   - Hold [FX1] or [FX2] + [PAD]. The pad selected will refer to the FX type applied with a default value. When [FX1] or [FX2] is released the effect is applied.
   - Hold [FX1] or [FX2] + Turn (Jog). The FX type is selected with a default value. When [FX1] or [FX2] is released the effect is applied.
   - Hold [FX1] or [FX2] + Press [Up] or [Down]. The FX type is selected with a default value. When [FX1] or [FX2] is released the effect is applied. Using [Left] and [Right] will navigate in large steps.
   - Hold [FX1] or [FX2] alone. The current FX type is selected with a default value. When [FX1] or [FX2] is released the effect is applied
6. The FX1 will be displayed with the colour magenta and FX2 will be displayed with light blue coloured text.
7. Turning (Jog) on the highlighted FX slot will now adjust its value. This may also automatically preview the effect applied sound.

In the Effect window, press the 7th and 8th screen button to toggle the description of the highlighted effect on or off. This is an aid to using the FX.

NOTES

FX Types.

The two FX slots can be populated from a library of FX effects. Each FX has an effect type plus the associated value.

FX Type	Description
-	None. Empty FX1 or FX1 effect. No effect applied.
!	Off. Will toggle off the effect used on the prior effect step.
V	Volume or Velocity (NOTE OFF) for MIDI.
P	Positions the step sound left / right in the stereo plane.
M	Micro Tune. Fine pitch tuning of note and MIDI Out.
G	Glide time from previous to current note - based on the note pitch.
T	Tempo change. Changes the pattern tempo.
I	Swing. Applies a swing from any step track for the entire pattern.
m	Micro move nudges forward by a small amount the step position.
q	Gate length. Adjusts the step note gate length.
C	Chance is the probability of a note playing.
R	Roll, beat repeats the note also with options for volume or pitch inc/dec.
A	Arpeggiator, for creating pitch based melodies. (Also needs MIDI Chord)
n	Random note. Sets a range of notes for random playback.
i	Random instrument. Sets a range of instruments for random playback.
f	Random FX. Sets a random FX to the step from a selected range.
v	Random Volume. Sets a random velocity variation on each cycle
r	Reverses sample playback. Played end to start.
p	Sets the playback position for a sample start, wavetable or granular position
S	Plays the selected slice for the step - sliced samples
g	Volume LFO Rate
h	Panning LFO Rate
j	Filter LFO Rate
k	Position LFO Rate
l	Finetune LFO Rate

NOTES

FX Type	Description
D	Overdrive amount for the step
L	Low Pass Filter Cutoff. Frequency represented by 0-100%
B	Low Pass Filter Cutoff. Frequency represented by 0-100%
H	Low Pass Filter Cutoff. Frequency represented by 0-100%
s	Delay. Amount of send effect 0-100%
t	Reverb. Amount of send effect 0-100%
E	Bit depth. 4 Bits to 16 Bits.
U	Tuning. -24 semitones to +24 Semitones. 4 Octave range.
F	Slide up amount. Range is 0-255 with 1/16th semitone increments.
J	Slide down amount. Range is 0-255 with 1/16th semitone increments.
a	CC A / Macro 1 (MIDI CC Number of Synth Macro). MIDI also needs an assigned channel & Instrument to the step.
b	CC B / Macro 2 (MIDI CC Number of Synth Macro). MIDI also needs an assigned channel & Instrument to the step.
c	CC C / Macro 3 (MIDI CC Number of Synth Macro). MIDI also needs an assigned channel & Instrument to the step.
d	CC D / Macro 4 (MIDI CC Number of Synth Macro). MIDI also needs an assigned channel & Instrument to the step.
e	CC E / Macro 5 (MIDI CC Number of Synth Macro). MIDI also needs an assigned channel & Instrument to the step.
f	CC F / Macro 6 (MIDI CC Number of Synth Macro). MIDI also needs an assigned channel & Instrument to the step.
0	MIDI Chord, note output. (Used also with Arp).

6

Instruments

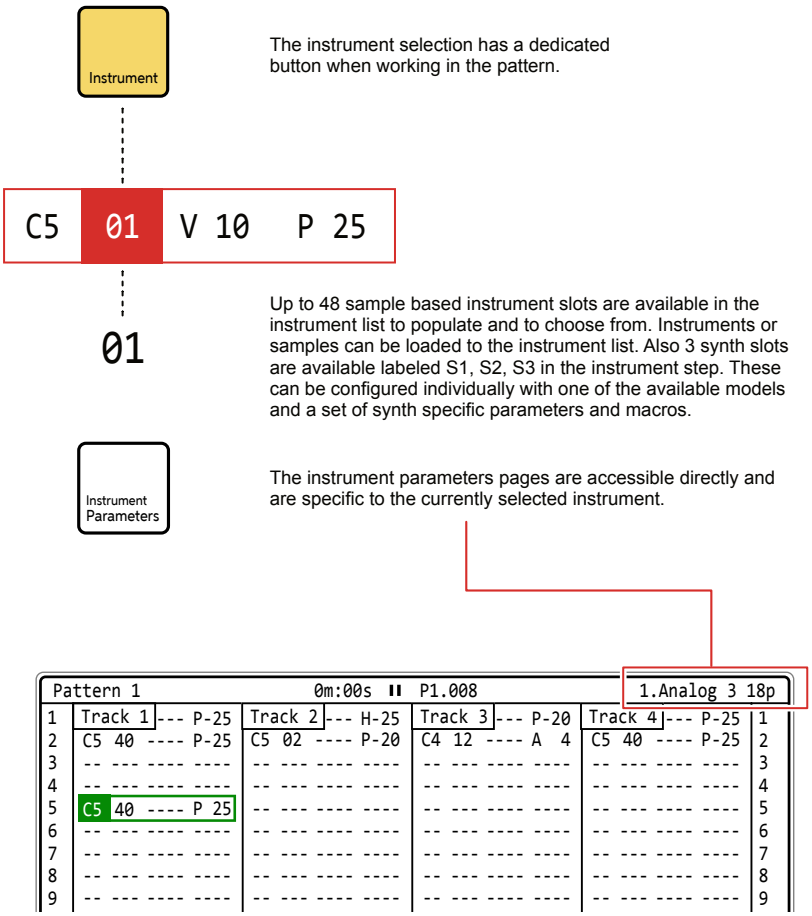
In the language of Tracker+, an instrument is the part of a step that generates sound. This is either an audio sample or an assigned synth both with their own settings. Sample Instruments are loaded into the instrument pool to be accessible in a project (explained in the project section). Synths offer 3 slot options each of which can be populated with one of the 5 different synth models and a preset configuration applied. Sample parameters set the configuration of the sample itself and also the integration within the Tracker+ instrument feature set. A sample can be sliced for example to be used as beats in a drum kit. It can form the central audio source for the wavetable and granular engines. These operate similar to synthesizers. It can also simply be a pure stand alone sample. Synths can be configured with core sound engines and parameter values to shape and hone a sound all of which can be stored as a preset. Building instruments and their application in Tracker+ is an essential foundation for sound design. MIDI instruments also exist and the application of these is covered in the MIDI section. There are a variety of things that can be done to create an instrument. Working with instruments clearly has a cross over between the practical, process orientated tasks and the creative, inspirational parts. Both are equally important and often it is worth dedicating time purely to sound design and instrument creation. Building a library of say, percussion, drums, bass, leads, or pads and textures, and so forth is good practice. This can make the track design and full song production workflow smooth and simple, helping to switch the focus on the assembly and creation of patterns. Instruments are stored as '.pti' files and can be used across projects and can be distributed and shared with others.

6 Instruments

6.1 Instrument Overview

NOTES

An audio instrument is the primary sound source in Tracker+ and is based on an audio sample or synth. The instrument can be a raw sample of configured into a more elaborate instrument such as wavetable. The Instrument parameters will configure settings. The sound can be affected by effects and modulation but essentially an instrument has a sample at its core and is triggered by the step on which it is applied. MIDI Instruments are also available which are covered in the MIDI section.



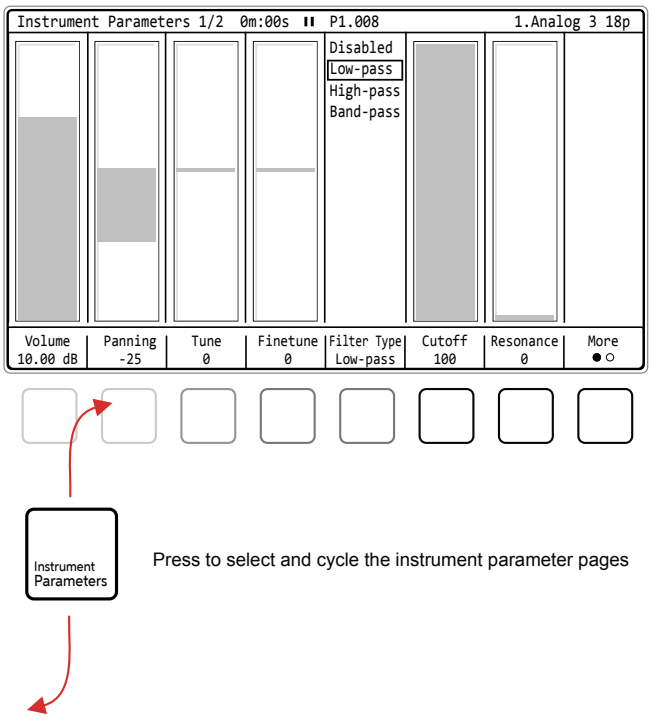
.pti Instruments can be created from samples, edited, sliced and saved as '.pti' files which can then be used in other projects or shared with others.

NOTES

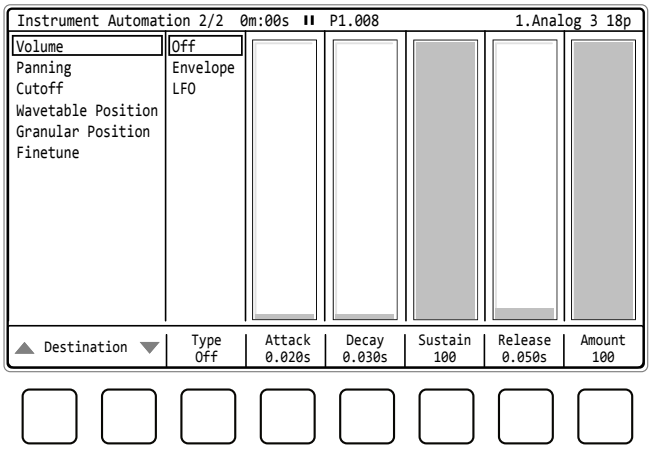
6.2 Sample Based Instrument Parameters

A series of instrument parameters are accessible for controlling, shaping and modulating the sound. For selected sample instruments 1-48, two pages are accessible directly from toggling the [Instrument Parameter] button. Page 1 is general parameters while Page 2 focusses on parameter automation. Remember, pressing [Delete / Backspace] on a selected parameter will reset it to it's default state.

Page 1 of 2: General Sample Based Parameters



Page 2 of 2: Automation Parameters



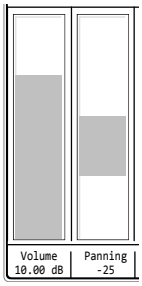
Screen buttons select the parameter options or [Right] [Left] to navigate option. Then turn (Jog) or press [Up] [Down] to adjust / select

6.3 General Instrument Parameters - Page 1

NOTES

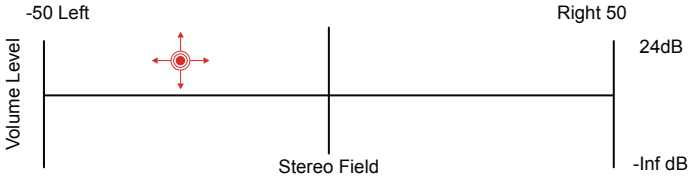
The general settings page covers sample based parameters that affect general audio functions.

Volume / Pan

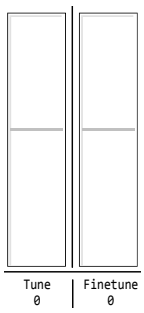


Volume
Adjusts the audio level of the instrument.
Range is -inf dB to 24.00 dB

Panning
Adjusts the audio position left to right balance in the stereo field.
Range is -50L (fully left) to +50R (fully right)

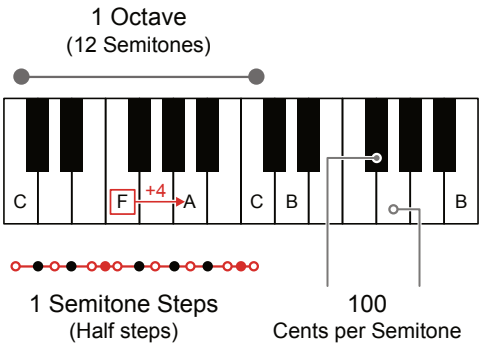


Tuning



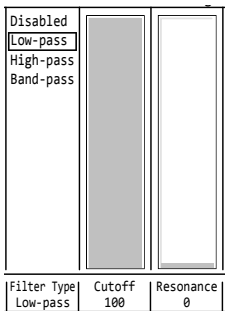
Tune
Adjusts the audio pitch tuning of the sample.
Range is -24 Semitones to +24 Semitones

Finetune
Adjusts the sample audio pitch fine tuning.
Range is -100 Cents to +100 Cents



NOTES

Filter



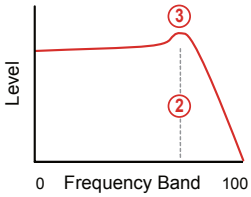
Filter Type ①
Selects the type of filter to apply.
Options; Disabled, Low-pass, High-pass, Band-pass

Cutoff ②
Filter cutoff frequency. Point of attenuation.
Range is 0% to 100%

Resonance ③
Boosted frequency point to create resonance.
Range is 0% to 100%

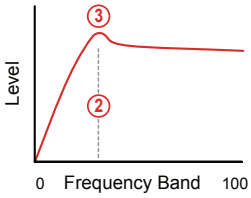
Filter Types & Functions
A filter attenuates and cuts areas of the frequency range in an audio signal.

Low Pass Filter ①



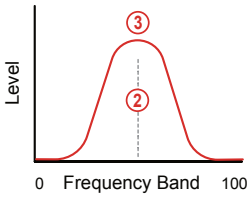
A low pass filter allows the frequencies through which are below the cutoff frequency and attenuates the audio signal frequencies above the cutoff. Resonance boosts the audio at the selected frequency.

High Pass Filter ①



A high pass filter allows the frequencies through which are above the cutoff frequency and attenuates the audio signal frequencies below the cutoff. Resonance boosts the audio at the selected frequency.

Band Pass Filter ①



A band pass filter allows frequencies through within a band of the cutoff frequency and attenuates the rest of the audio signal frequencies. Resonance boosts the audio at the selected frequency. Band width (Q) is not adjustable in the Tracker+ band-pass filter.

NOTES

Access to control the general parameters is simple and quick. The process described applies when accessing all instrument parameters and effects.

ADJUSTING INSTRUMENT PARAMETERS

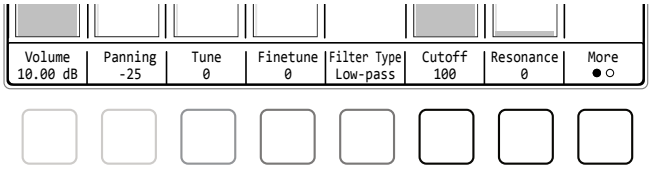
1. Ensure the desired instrument is selected. This will be shown top right of the screen.
2. Press [Instrument Parameters] to select the parameters pages.
3. Pressing [Instrument Parameters] again will toggle between the general parameter page and the automation parameters.
4. Within the instrument page 1 of 2 (displayed top left), the instrument effects are accessible. Press [*More*] screen button to open the effects page, and press [*Back*] to return to the main page.
5. Press the screen button below the desired option to select. Pressing [Left] or [Right] will navigate the options. The selected parameter will show a red bounding box.
6. Within a selected option, Turn (Jog) to manually adjust the parameter value e.g. Volume.
7. Alternatively, Press [Up] or [Down] to incrementally adjust the parameter value. Holding [Up] or [Down] will continuously adjust the value.
8. With a parameter selected, Press [Delete / Backspace] to reset it's value to the default setting. For example Panning will reset to 0.
9. Parameters are presented in columns. The value is shown in the graphic of the upper main page and also the exact value is shown below the parameter name in the screen button labels.
10. To exit the instrument parameters, select another page e.g. [Pattern].

NOTES

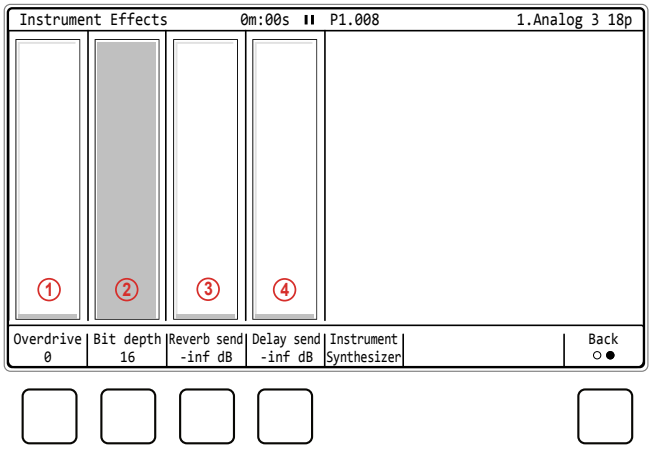
6.4 Instrument Effect Parameters - Page 1

The general settings page 1 also gives access to a series of instrument effect parameters. There are 2 instrument specific effects, overdrive and bit depth and also 2 send controls which use the common delay and reverb.

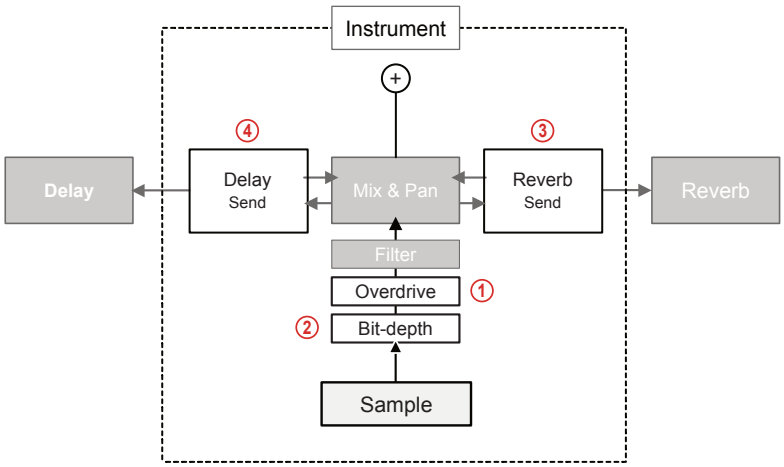
Page 1 of 2: General Sample Based Parameters



Instrument Parameter Effects



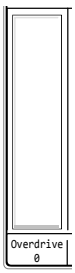
Screen buttons select the parameter options or [Right] [Left] to navigate option. Then turn (Jog) or press [Up] [Down] to adjust / select



NOTES

The effect settings page covers sample based parameters that affect the specific instrument. Note that the generic delay and reverb settings are in the master section of Tracker+.

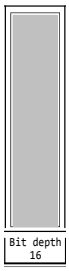
Overdrive



Overdrive

Overdrive introduces a gritty aggressive tone to the audio sound. Based on traditional practices of pushing the limits of an amplifier and creating distortion in the signal.
Range 0-100%

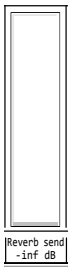
Bit Depth



Bit Depth

Analog signal are smooth evolving shapes. Digital audio samples represent this by sampling and registering the audio information into number of bits. The higher the number the better a signal is represented. Tracker+ uses 16 Bit audio which is CD standard, but can be reduced to give a more LoFi sound effect.
Range 4-16

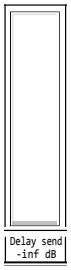
Reverb Send



Reverb Send

The reverb send is not an effect in itself but controls the amount of instrument audio that is sent to the master reverb. This is mixed to the signal and combined with other sends. Reverb adds space and represents room reflections simulating spacial depth, distance or proximity.
Range 0-100%

Delay Send



Delay Send

The delay send is not an effect in itself but controls the amount of instrument audio that is sent to the master delay. This is mixed to the signal and combined with other sends. Delay adds an echo and repetition into a sound and is a creative effect and fills space to keep interest.
Range 0-100%

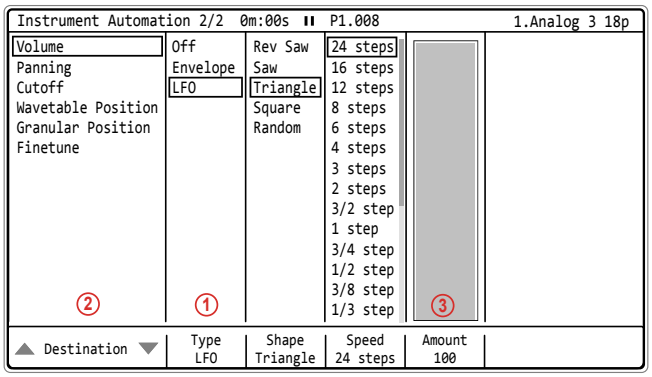
NOTES

6.5 Instrument Automation Parameters - Page 2

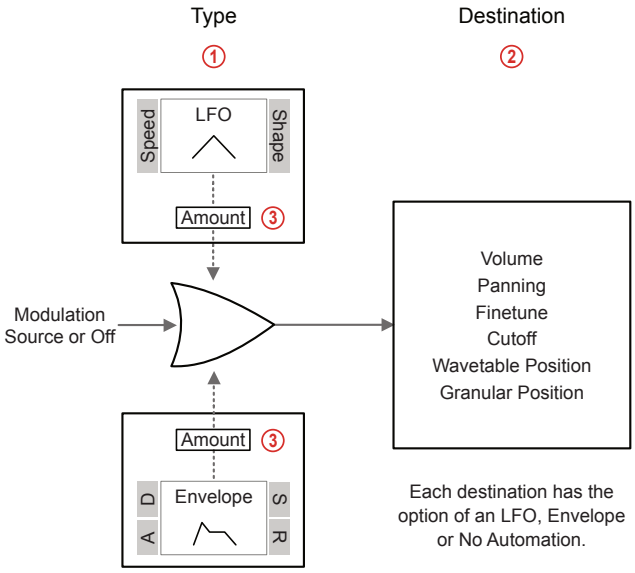
Automation also called modulation, creates movement and interest in an instrument sound. The instrument automation settings page covers the settings which control modulation over the instrument sound audio sample. These parameters are located in the second page of the instrument parameters.

The modulator can be an LFO or an Envelope. Both shape audio over a time period for one of the several selectable destinations.

Available parameters will depend on the destination and the automation type selected.



Screen buttons select the parameter options or [Right] [Left] to navigate option. Then turn (Jog) or press [Up] [Down] to adjust / select



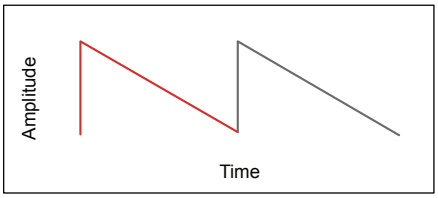
NOTES

Automation can add some highly creative and interesting features to a sound. This is applied by modulating parameters in the instrument sample. This can transition from a simple, static audio sound (when type is off) to add some subtle movement to generative and evolving sound designs. Try combining and experimenting with automation.

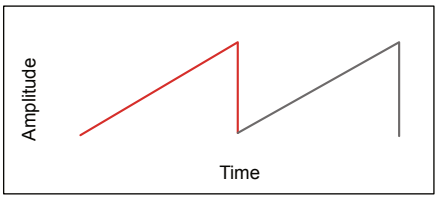
LFO - Low Frequency Oscillator

A low frequency oscillator (LFO) operates at a lower frequency than a normal audio oscillator which is typically used as an audio generator. The purpose of an LFO is to act as a modulator for parameters of other devices, to add interest and create movement. A common use of an LFO is to add a vibrato effect to control the pitch of a sound.

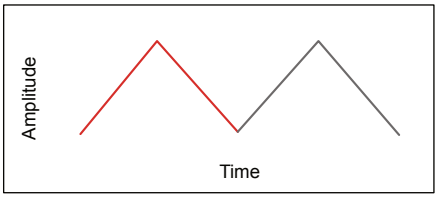
LFO Shapes
Examples show 2 Cycles of the LFO shape. Speed influences cycles across pattern.



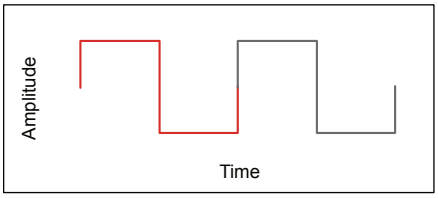
Reverse Saw
Ideal for ramp down sounds



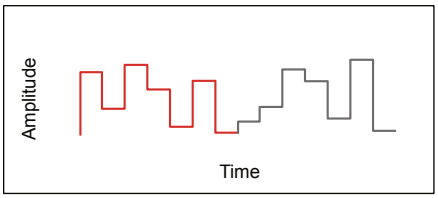
Saw
Ideal for ramp up sounds.



Triangle
Good for vibrato style sounds



Square
Great for steppy, pulses



Random
Steppy random sounds

NOTES

As well as the shape, the second key parameter is speed. LFO Speeds in Tracker+ are hard synchronised to the project tempo and are therefore assigned based on the number or intervals of steps. Despite Tracker+ having a de-clicking audio algorithm, some settings may still cause audio clicks due to the LFO cycle with respect the samples zero crossing points.

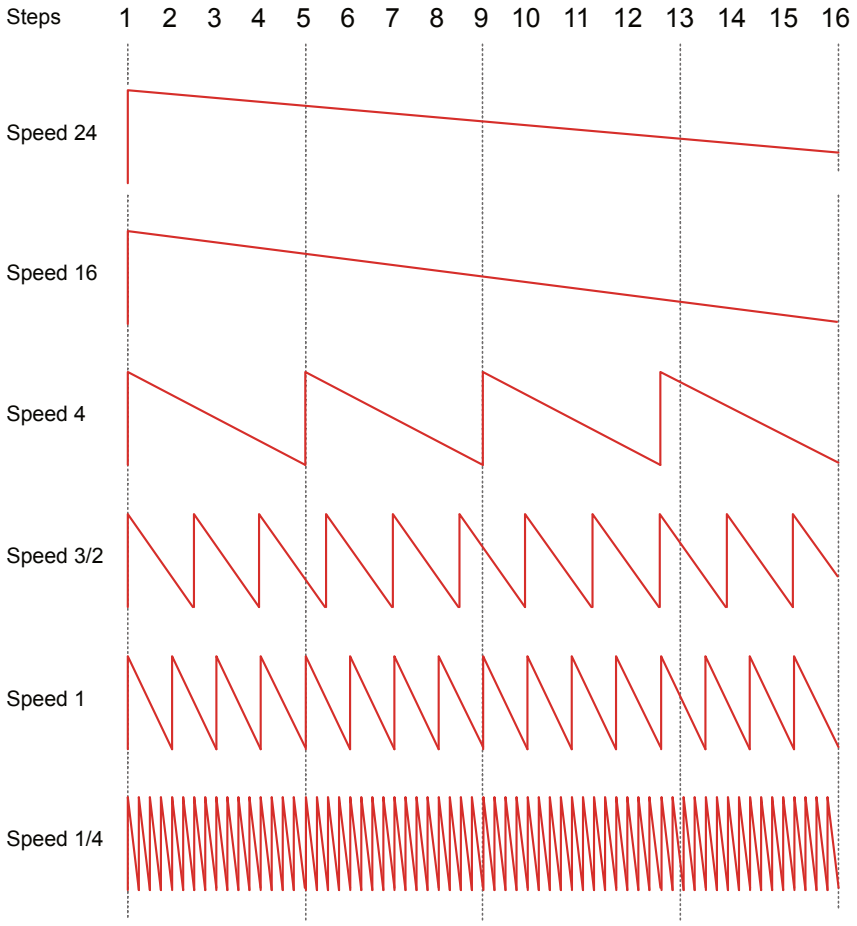
LFO Speed

Speed is based on pattern step intervals.

Speed * In Steps	Speed In Steps	Speed In Steps	Speed In Steps	Speed In Steps	Speed In Steps
128	24	4	3/4	3/16	1/24
96	16	3	1/2	1/6	1/32
65	12	2	3/8	1/8	1/48
48	8	3/2	1/3	1/12	1/64
32	6	1	1/4	1/16	

* 128 to 32 Step Speed options are not available with Volume as the destination.

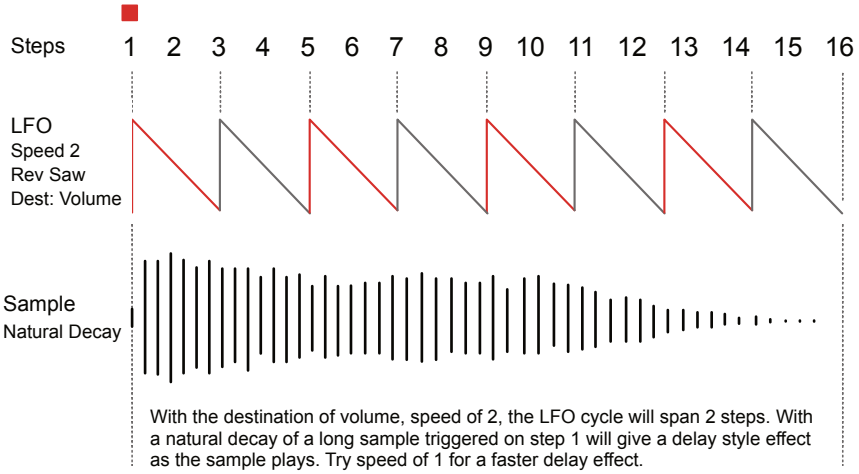
Speed Setting Illustrations

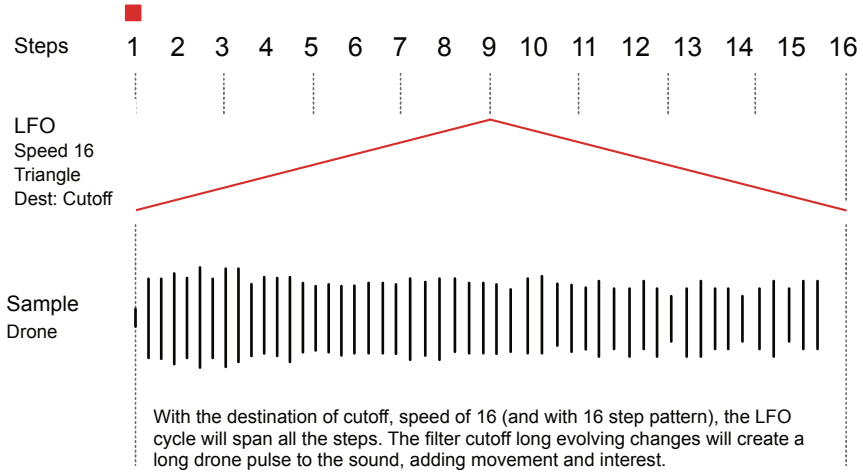


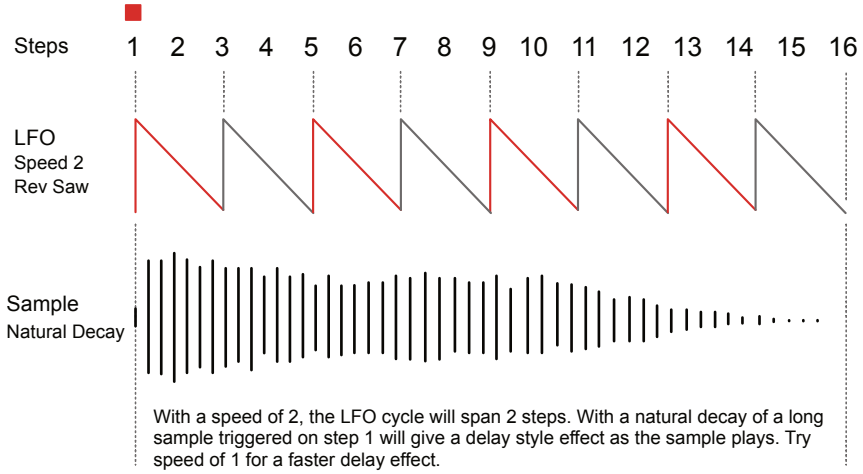
NOTES

Example Speed & Shape Options

With respect to steps



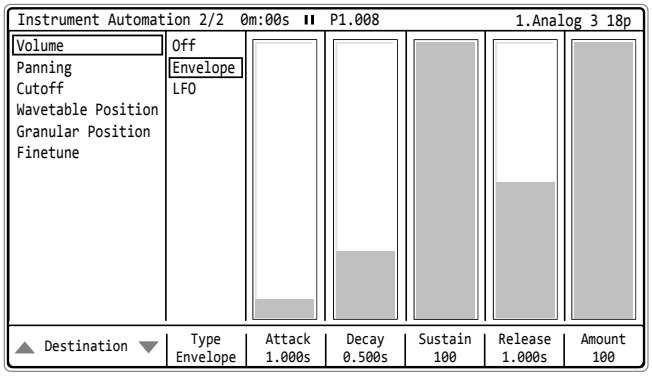




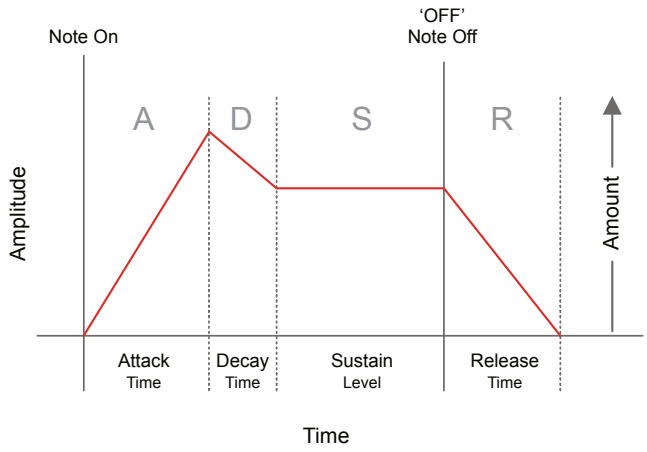
NOTES

Envelope

An envelope shapes the audio over time. While an LFO will cycle, an envelope is considered more of a one-shot function and typically operates across a note length. This is normally used to shape the sound of a note and how the sound develops from note on to note off (and beyond). It can also be used as a modulation effect. Tracker+ uses an ADSR envelope which has 3 time setting zones, Attack, Decay and Release plus the sustain level zone.



ADSR Envelope

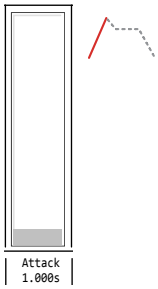


The OFF Command can be triggered on an individual step using the Note 'OFF' special command, accessible by turning (Jog) fully counter clockwise.

NOTES

The envelope page covers sample based parameters that affect the shape of the instrument sound over time. The selection of each parameter may not be linear to allow for a better resolution to choose the value in the more relevant range areas. The amount will set how much of the envelope is applied 0-100%.

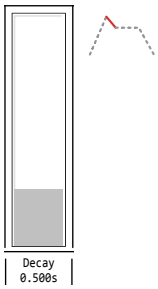
Attack



Attack Time

Attack is the initial time period of the envelope. This affects the transient of the sample. Shorter times for more percussive 'hits' and longer for more evolving ramps.
Range 0-10 Seconds.
0-1 Sec has a better resolution of control.

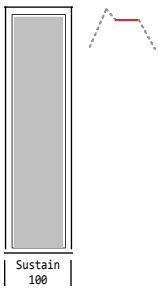
Decay



Decay Time

A decay time period which is applied after the attack phase and applying a note. The period before settling the sound level to a steady state.
Range 0-10 Seconds.
0-1 Sec has a better resolution of control.

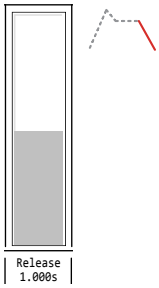
Sustain



Sustain Level

This is the nominal level at which the note / sound will sustain after the initial 'note on' request. This will be the level continuously played while holding a note.
Range 0-100%.

Release



Release Time

This is the final envelope stage and is activated after the note is released - Tracker+ 'OFF' special note command. This is the time period where the sound dissipates from the sustain level to silence.
Range 0-10 Seconds.
0-1 Sec has a better resolution of control.

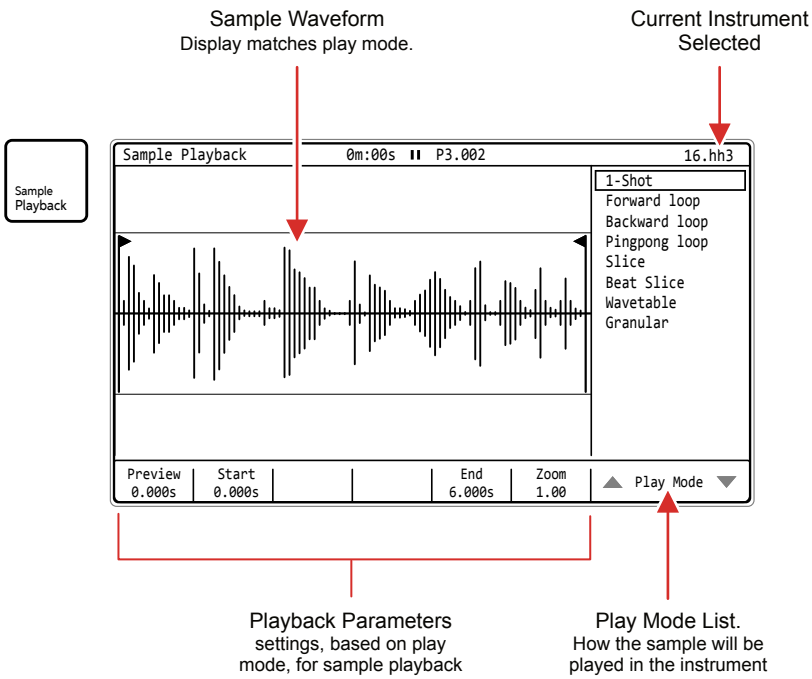
NOTES

6.6 Sample Playback Overview

An instrument can be a sample, edited or raw. A raw '.wav' sample can be added to the instrument list. When a sample is edited and developed further as an instrument it can be saved as a '.pti' instrument, for example 'drumkit1.pti'. This can be used across all projects or distributed to other producers. Sample based instruments are only used on steps in Tracks 1-8 while MIDI and Synths can be used on all tracks.

This section covers the basics of using .pti instruments, and not the end-to-end capturing, editing and use of sampling which is covered elsewhere.

How a sample is applied as an instrument is handled in the 'Sample Playback' page, accessed by the dedicated [Sample Playback] button.



Note: Playback is not visually animated in the waveform display when playing.

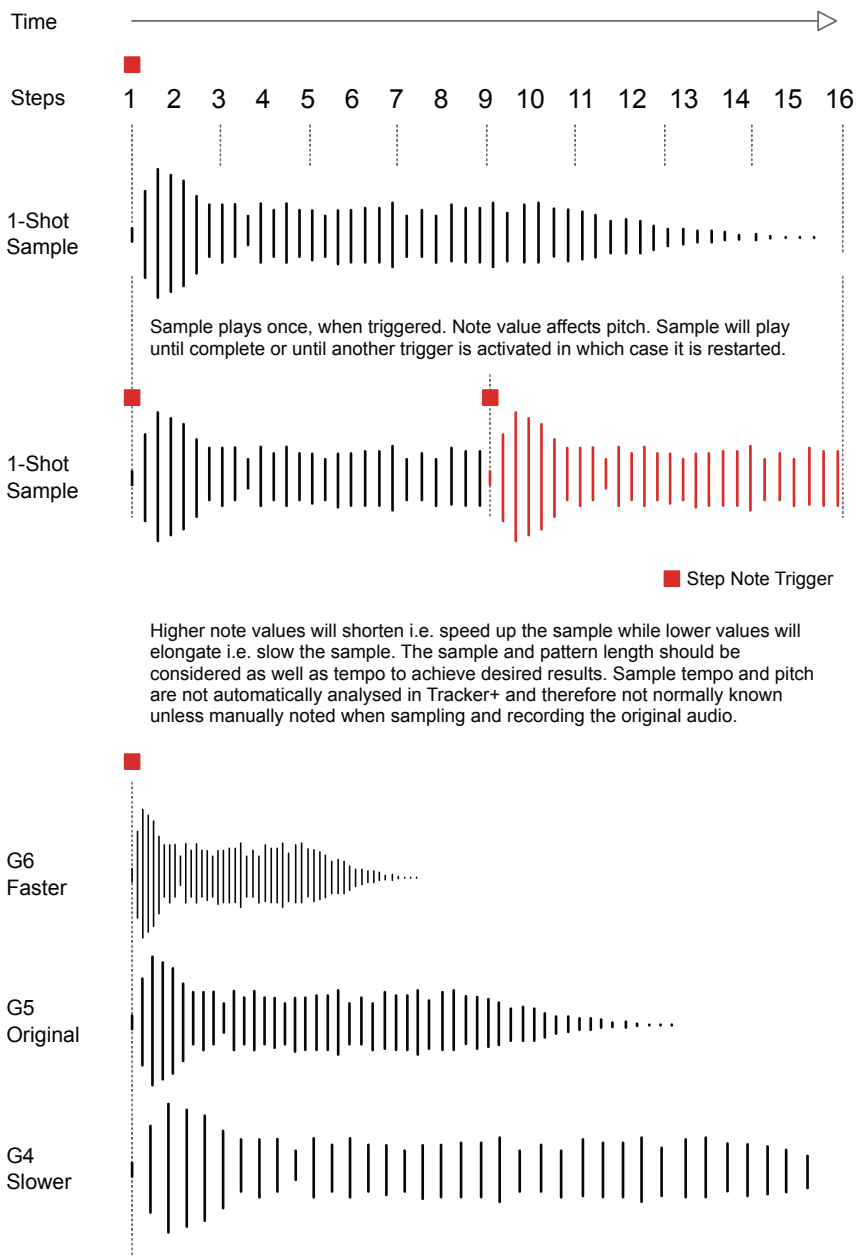
Type	Play Mode	Description
Play	1-Shot	Basic sample playback. Plays start to end once.
Loop	Forward Loop	Sample playback. Plays start to end and cycles on loop.
Loop	Backward Loop	Sample playback. Plays end to start and cycles on loop.
Loop	Pingpong Loop	Sample playback. Plays start to end to start on loop.
Slice	Slice	Sample is sliced
Slice	Beat Slice	Sample is sliced
Synthesizer	Wavetable	Sample is used as the wavetable, like a synth.
Synthesizer	Granular	Sample grains are used and played, like a granular synth

6.7 1-Shot Play Mode

NOTES

The most basic play mode is 1-shot which simply plays a sample through once, start to end. This is the normal operation when using samples without too audio much editing and where the general duration of the sample is to be retained.

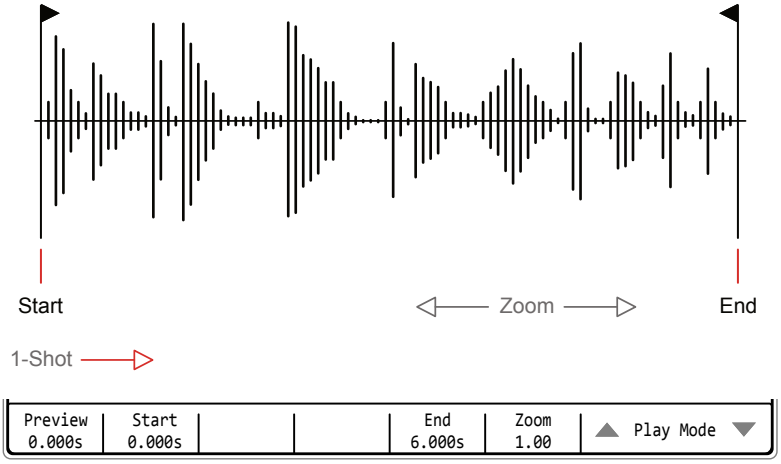
The note value, tempo and pattern length will also affect how the sample plays. A higher note value will play the sample faster. A lower note value will play the sample slower. Triggering the instrument step will trigger the 1-shot sample which will play for its duration or until another trigger is initiated.



NOTES

1-Shot Parameters

The available parameters are simple for the 1-shot option with only two editing parameters and one visual aid. Navigate and select using the Screen Buttons. Also navigation using the [Left] [Right] buttons to select the section and [Up] or [Down] or Turn (Jog) to change the value / selection.



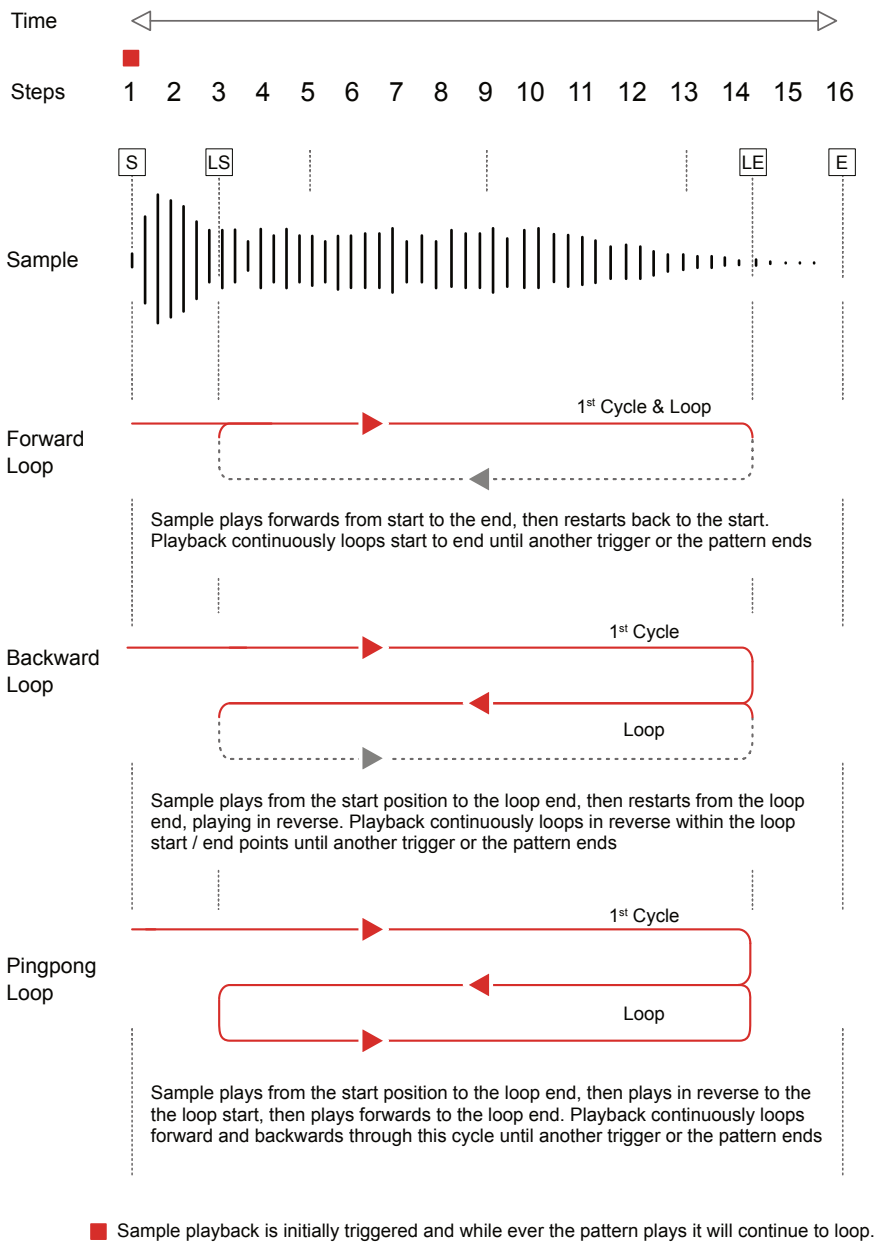
Function	Parameter	Screen Button	Range	Description
Edit	Play Mode	7th & 8th	Modes	Selects the play mode to apply. Includes 1-Shot plus loop modes and wavetable / granular synth.
Aid	Zoom	6th	Variable	Zooms in horizontally to the visual display for more precise editing. Does not affect playback. Zoom reference point is based on the previously adjusted parameter i.e. Start.
Aid	Preview	1st	Variable	Hold to play the sample. The number below the screen button label indicates current play position in seconds. Preview playback will run for approx 1 sec after releasing the preview button.
Edit	Start	2nd	Variable	Adjusts and edits the sample start point. This is the starting position used when a 1-shot sample is triggered in a pattern or when previewed. Marker is red but will change to green if a zero crossing point is detected at the current position.
Edit	End	5th	Variable	Adjusts and edits the sample end point. This is the ending position used when a 1-shot sample is triggered in a pattern or when previewed. Marker is red but will change to green if a zero crossing point is detected at the current position.

6.8 Loop Play Modes

NOTES

Three loop playback modes exist, forward loop, backward loop and pingpong loop. All of these three play modes have similar functions and only differ in their playback direction.

The note value, tempo and pattern length will also affect how the sample plays. A higher note value will play the sample faster. A lower note value will play the sample slower. Triggering the instrument step will trigger the sample once and it will continue to play for its duration in loop until another trigger is initiated or the pattern ends.

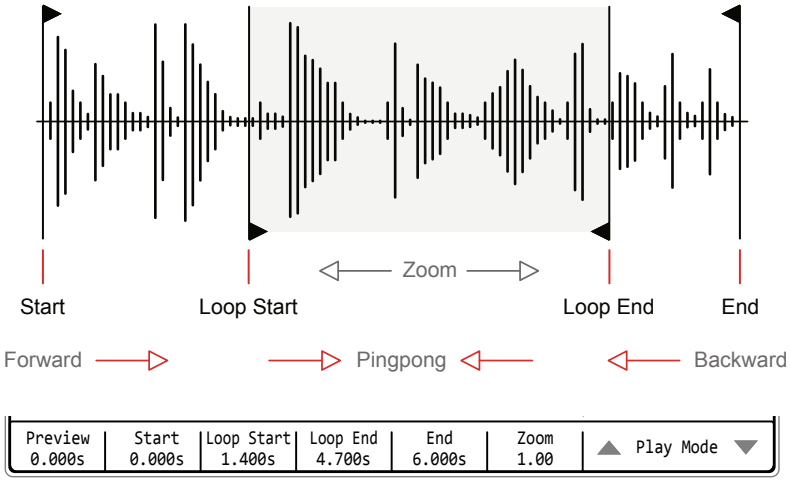


■ Sample playback is initially triggered and while ever the pattern plays it will continue to loop.

NOTES

Loop Parameters

The parameters for the forward loop, reverse loop and pingpong loop play are identical across these play modes. Options are start / loop start, end / loop end plus the zoom visual aid. Navigate and select using the Screen Buttons. Also navigation using the [Left] [Right] buttons to select the section and [Up] or [Down] or Turn (Jog) to change the value / selection.



Function	Parameter	Screen Button	Range	Description
Edit	Play Mode	7th & 8th	Modes	Selects the play mode to apply. Includes forward loop, backward loop, pingpong loop as well as 1-Shot and wavetable / granular synths.
Aid	Zoom	6th	Variable	Zooms in horizontally to the visual display for more precise editing. Does not affect playback. Zoom reference point is based on the previously adjusted parameter i.e. Start.
Aid	Preview	1st	Variable	Hold to play the sample. The number below the screen button label indicates current play position in seconds. Preview playback will run for approx 1 sec after releasing the preview button.
Edit	Start	2nd	* Lower than End	Adjusts and edits the sample start point. This is the starting position when the sample is first triggered in a pattern or when previewed. Red marker turns green at a zero crossing point.
Edit	Loop Start	3rd	* Higher than Start	Adjusts the sample loop start point. This is the start position used on the 2nd and subsequent playback cycles, playing from loop start to loop end. Value will always be same or higher than start position. Red marker turns green at a zero crossing point.
Edit	Loop End	4th	* Lower than start	Adjusts the sample loop end point. This is the end position used for playing a loop. Value will always be same or lower than end position. Red marker turns green at a zero crossing point.
Edit	End	5th	* Higher than Start	Adjusts and edits the sample end point. The ending position, outside of a loop when a sample is triggered in a pattern or when previewed. Red marker turns green at a zero crossing point.

* Start / End, Loop Start / End Positions cannot cross over. Start is always before end.

6.9 Slice Play Modes

NOTES

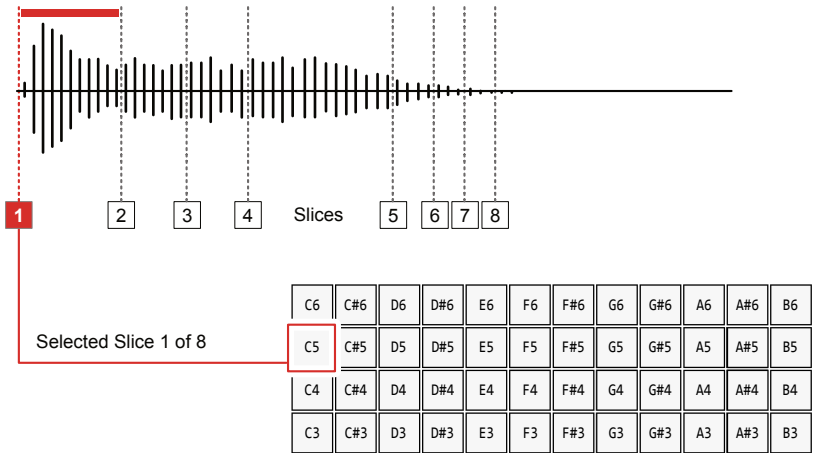
Two slice playback modes exist, slice and beat slice both of which have similar functions and parameters.

Slice mode is typically used to slice a melodic audio sample, for example to create pitch based kits and to trigger slices per step from the FX, ‘S’ step function. The pads in Slice mode represent current scale.

Beat Slice mode is typically used to slice percussive and atonal samples. The pads in Beat Slice mode represent individual slices, for example hits of a drum kit and are useful for playing and recording live beats.

Slice

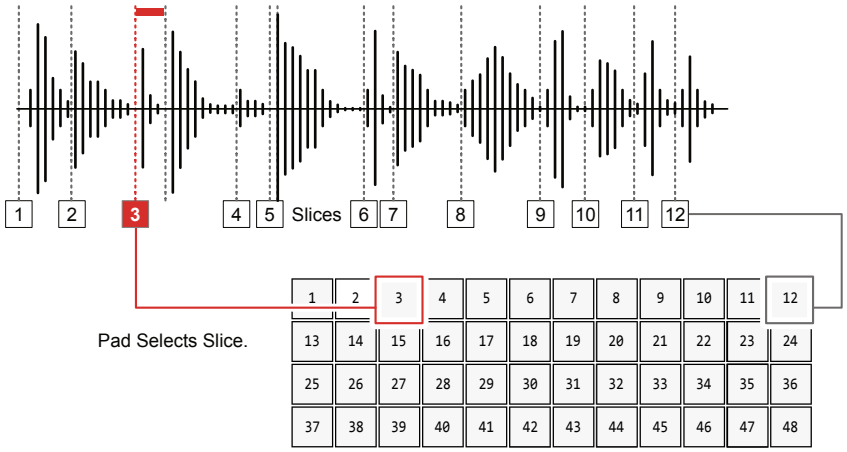
Examples: Synth Note, Piano, String Pad



Pads play the selected slice melodically in the current pitch scale.

Beat Slice

Examples: Combo of Kick, Snare, Hat, Effects

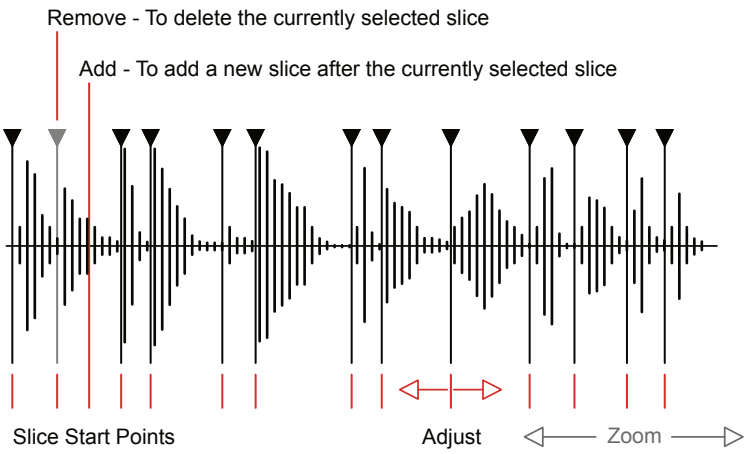


Pads select and play each slice individually. Ideal for recording beats.

NOTES

Slice Parameters

The parameters for slice and beat slice are identical across the play modes but may have different behaviours in use. Navigate and select using the Screen Buttons. Also navigation using the [Left] [Right] buttons to select the section and [Up] or [Down] or Turn (Jog) to change the value / selection.



Function	Parameter	Screen Button	Range	Description
Edit	Play Mode	7th & 8th	Modes	Selects the play mode to apply. Includes Slice and Beat Slice as well as 1-Shot and wavetable / granular synths and loop modes.
Aid	Zoom	5th	Variable	Zooms in horizontally to the visual display for more precise editing. Does not affect playback. Zoom reference point is based on the previously adjusted parameter i.e. Slice number.
Edit	Slice	1st	Variable	Selects the slice number for editing from the available number of slices. Also will select the slice to playback in scale when in Slice Play Mode. Use Pads to preview playback and also to select the slice in Beat Slice Play Mode.
Edit	Adjust	2nd	Variable	Adjusts the start position for the selected slice. Cannot exceed the previous or next slice position. Use zoom to assist with precise editing. Red marker turns green at a zero crossing point.
Edit	Add	3rd		Adds a new slice after the currently selected slice start marker. Slice will be added centrally between the currently selected slice start and next slice start or end position.
Edit	Remove	4th		Removes and deletes the currently selected slice start marker. No prompt - immediate deletion.
Menu	More	6th		Cycles through the available menu pages
Edit	Slice Auto	1st Page 2	Automatic	Automatically removes any existing slice markers and adds a series of new markers at each transient point. Prompt to confirm is given.
Edit	Number of Slices	3rd Page 2	1 - 48	Sets the number of slices to create when using the 'equal' slice option. This applies the number of equally spaced slices across the sample.
Edit	Equal Slice	2nd Page 2		Initiates slicing of the sample into the equal spaced slices, set by 'number'. Prompt to confirm.

NOTES

SLICING A SAMPLE

1. Ensure the desired instrument is selected with the sample to edit. This will be shown top right of the screen.

2. Press [Sample Playback] to select the playback mode pages.

3. Press the 7th or 8th Screen Button to navigate to 'Slice' or 'Beat Slice' Play mode depending on the function required.

4. To slice the sample, follow one or a combination of the slicing techniques. Up to 48 slices are possible:

   a. Transient Slicing. Will automatically slice the sample into a number of slices located at the points where a dynamic amplitude change is detected. The number of slices is based on the number of transients detected. Switch between pages using [*More*] screen button.

      - On Page 2, Press [*Slice Auto*] screen button and acknowledge when prompted. Existing slices are cleared and new ones created.

   b. Equal Slicing. This will slice the sample in a set number of equally spaced positions. Amount of slices set by the 'Number' value. Hold [Shift] to access this feature. Switch between pages using [*More*].

      - On Page 2, Press [*No of Slices*] screen button and Turn (Jog) to set number of slices to create.

      - On Page 2, Press [*Slice Evenly*] screen button. Acknowledge [*Confirm*] on prompt. Existing slices are cleared and new equidistant slices are created.

   c. Manual Slicing. This will add 1 slice at the central point between the currently selected slice start marker and the following slice start.

      - Select a slice, Press [*Slice*], X of Y, Where X is the selected slice and Y the total number of slices available. This is the 1st Screen button on Page 1.

      - Turn (Jog) to select the slice number.

      - On Page 1, Press [*Add*] screen button. The new slice is added. If no slices are present at all, then a new one is added at the sample start position.

      - A new slice automatically becomes the currently selected slice.

NOTES

REMOVING A SLICE

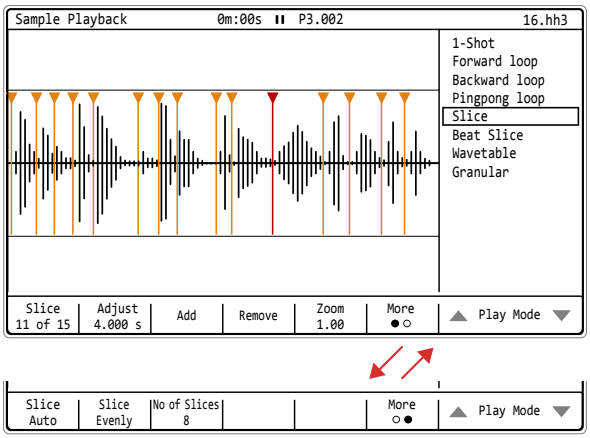
1. Press [Sample Playback] to select the playback mode pages. Ensure the menu page 1 is selected. Use [*More*] to change menu pages.

2. Press the 7th or 8th Screen Button to navigate to 'Slice' or 'Beat Slice' Play mode depending on the function required.

3. Select a slice, Press [*Slice*] screen button. X of Y, Where X is the selected slice and Y the total number of slices available.

4. Turn (Jog) to select the slice number to delete.

5. Press [*Remove*] screen button. The selected slice is deleted immediately (no prompt) and the currently active slice reverts to the previous slice.



ADJUSTING A SLICE POSITION

1. Press [Sample Playback] to select the playback mode pages. Ensure the menu page 1 is selected. Use [*More*] to change menu pages.

2. Press the 7th or 8th Screen Button to navigate to 'Slice' or 'Beat Slice' Play mode depending on the function required.

3. Select a slice, Press [*Slice*] screen button. X of Y, Where X is the selected slice and Y the total number of slices available.

4. Turn (Jog) to select the slice number to edit.

5. Press [*Adjust*] screen button. Zoom may help create precise edits.

6. Turn (Jog) or Press [Up] or [Down] to adjust the slice start position.

6.10 Wavetable Play Modes

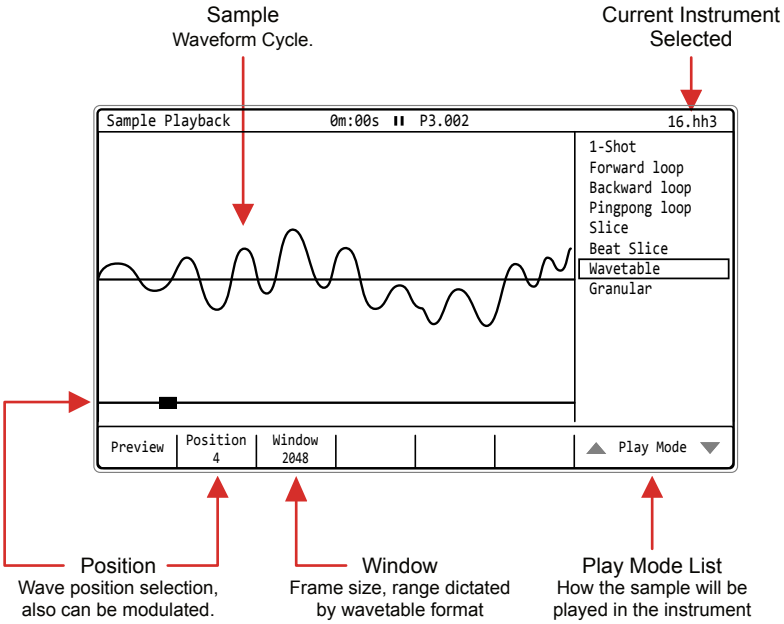
NOTES

Wavetable instruments can be created in Tracker+. This emulates classic wavetable synthesizers by using a sample as the wavetable source. Standard Tracker+ samples can be used ‘out of the box’ or samples prepared specifically to suit the application in a wavetable synth and give better performance. While Tracker+ offers only a basic implementation of wavetable synthesis it does bring a different creative option into the instrument library.

What is Wavetable Synthesis?

The most common synth model is subtractive synthesis. This is based on a sound source, typically using one or more oscillators, tuned in various ways. The sound is then shaped and carved by filtering out (subtracting) frequencies, applying envelopes and adding effects. Wavetable synths typically follow these same principles but the ‘oscillator’ is formed from a series of wave-shapes called wavetables. In reality, a wavetable consists of a number of stacked samples called frames, the accepted standard being 256 frames.

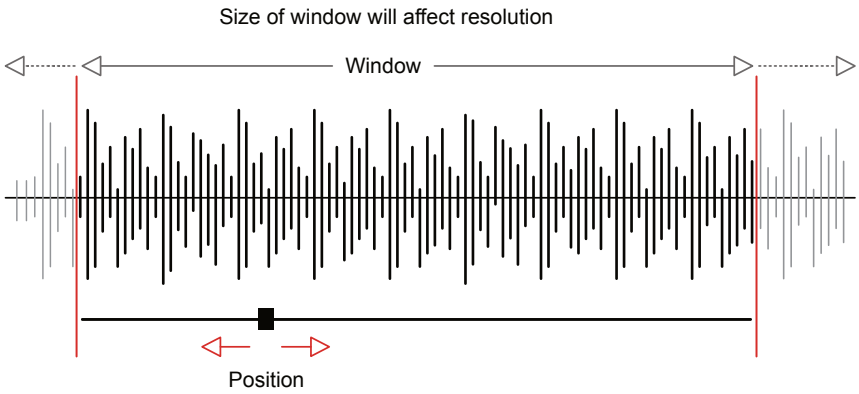
Navigating or modulating through the almost endless wave positions and selecting ‘single cycles’ in the wavetable is a fundamental element in wavetable sound design. In Tracker+ the wavetable size (samples per frame) is set by the ‘Window’ parameter. Think of this as the length of the available table, the default maximum being defined by the original audio sample format. The specific ‘Position’ within the wavetable is also selectable and important in the sound design process. Position can also be modulated.



NOTES

Wavetable Parameters

The wavetable play mode is a simplified application of wavetable synthesis and consists of two core parameters. The Window is the wavetable length (samples per frame) and has a maximum value based on the original file. The position parameter is what enables the creative sound design and audio manipulation. This can be manually adjusted to find a sweet spot or modulated with the envelope or LFO.



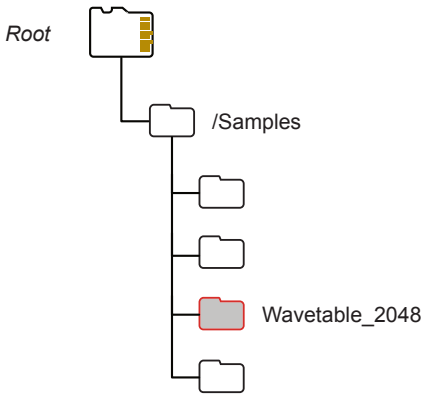
Function	Parameter	Screen Button	Range	Description
Edit	Play Mode	7th & 8th	Modes	Selects the play mode to apply. Includes Wavetable and Granular as well as 1-Shot and the three loop modes.
Aid	Preview	1st		Hold to play the wave from the current position selected in the window. Also hold while adjusting position to 'scan' for the desired sound.
Aid	Window	3rd	Variable	The width of the wavetable can be adjusted down from the default maximum. The parameters are normally divisions of 2 down from the maximum (Typically 2048)
Edit	Position	2nd	Variable	Selects the playback position within the wavetable window. This can be manually adjusted to find the desired 'sweet spot' or modulated with an LFO or Envelope for movement and interest.

NOTES

Optimising Wavetables

The best approach to operating with wavetable synthesis is to use WAV files that have been created for wavetable use. This will adhere to the frame / sample conventions stated. Also the audio samples will be created with smooth rather than stepped transitions between waves. There are many pre-prepared wavetables available for download but also check out the online sheets of sound creator and Modbap Modular OsirisEdit to learn more about wave creation.

Tracker+ factory wavetable files are located in the samples folders on the microSD card.



There are many freely available wavetable samples online. Standard samples can be used but wavetable formatted WAV files provide better and smoother performance. The most common standard is 2048 Samples / Frame (256 Frames). This applies to XFer Serum, U-He Hive, Dune, but others may also exist. Ableton Live Wavetable uses 1024 samples and down samples when a 2048 format is applied.

NOTES

Standard audio files may sound ‘stepped’ when navigating the position. Tracker+ has an on-board optimisation tool, WT Smoother which will process a standard sample and help smooth the sound and give better performance. This effectively converts the file to a more suitable format for Tracker+ Wavetable Synth. Navigating a processed audio wave will sound smoother in the transition across positions.

USING WT SMOOTHER TO OPTIMISE SAMPLES

1. Ensure the sample is loaded to the instrument list and selected as currently active. Note that samples in the instrument list are copied into the onboard memory from the microSD card.

2. Press [Sample Editor] to select the playback mode. Operations in the ‘Sample Editor’ are performed destructively to the sample in memory. However the original file is retained intact on the microSD card.

3. Edit the audio file [*Start*] screen button and [*End*] screen button and Turn (Jog) to select a part of the sample to process.

4. Press the 7th or 8th Screen button to navigate to ‘WT Smoother’.

5. Press [*Select effect*] screen button to select WT Smoother.

6. Press [*Window Num*] screen button and Turn (Jog) to adjust. This selects frames. The 256 default is a typical setting to use.

7. Press [*Window Len*] screen button and Turn (Jog) to adjust. This selects sample length. The 2048 default is a typical setting to use.

8. Press [*Preview*] screen button to audition the audio while editing. This will need to process the audio before playing. Press [*Stop*] screen button again to stop preview.

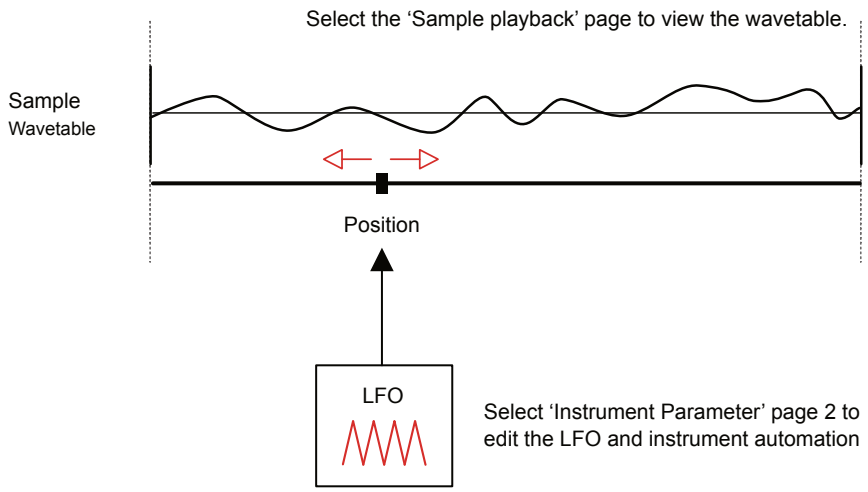
9. Press [*Apply*] screen button to apply and render the new audio file. This converts to a wavetable and can be used in the wavetable play mode as a smoother more refined option.

10. Save the project to also save the edited instruments in the project folder. Press [File] then Press [*Save*] screen Button. Saving the project also automatically saves the instruments in the instrument subfolder. These can be accessed from other projects.

NOTES

Modulating Wavetables

The wavetable position is the key parameter to adjust and edit to search for a desired sound. This parameter can also be modulated from within the instrument automation page using an envelope or LFO. This adds movement and interest.



Hold [*Preview*] in the wavetable page while the LFO is running will display the animated position dynamically in real time.

Fast LFO Speeds can create glitchy and noisy sound designs. Use slower LFO speed or envelope and reduce the wavetable window for developing sound textures and ambience especially with added effects such as reverb. Try synchronised speeds to tempo / steps to create rhythmic patterns. The LFO amount will also effect how strong the LFO is applied.

Try manually adjusting the window and position while playing and with an LFO to experiment with the sound.

NOTES

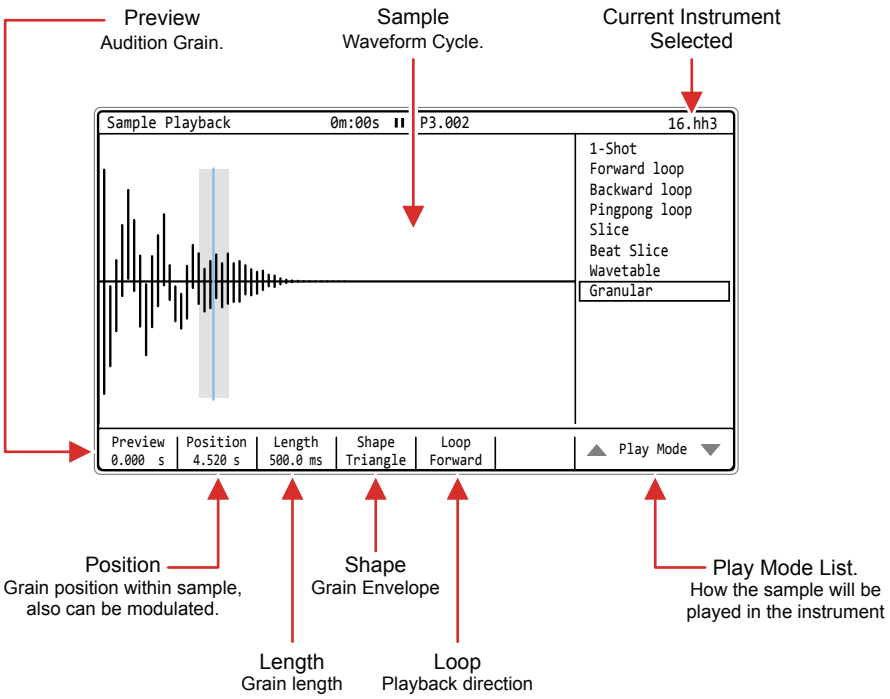
6.11 Granular Play Modes

Granular instruments can be created in Tracker+. As with all Tracker+ instruments, Granular synth uses a sample as its core sound source. Granular synthesis is ideal for glitchy soundscapes and textural sounds.

What is Granular Synthesis?

Granular synthesis breaks a sample down into tiny slices, lets describe this as microscopic level. These narrow slices are generally less than 1 second but often much shorter in duration and are called grains. Sound is generated in a granular synthesizer by looping playback around a grain. It is common practice to use modulation to bring a granular synth to life especially using grain position. Granular synths can still use the same features as in subtractive synthesis including filter and envelopes.

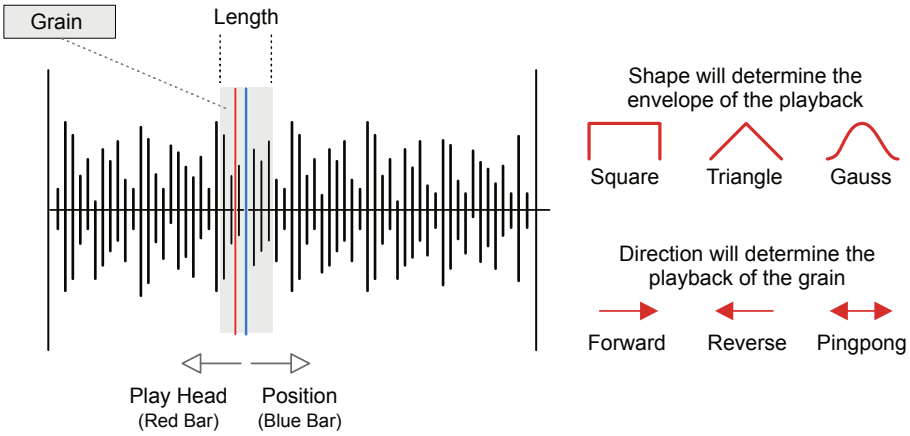
Modulating grain position is at the heart of the Tracker+ implementation of granular synthesis where an LFO or envelope can be used. The position can be set manually within its parameters as can length with a range up to 1000ms. Also shape and loop direction of playback parameters can also be adjusted manually in the Granular synth playback mode.



NOTES

Granular Parameters

The granular play mode is a simplified application of granular synthesis and consists of four core parameters. The grain length is duration of the small slice of audio, while loop defines the direction of playback across the grain. Shape is the envelope shape applied to the grain playback, recognised in the attack phase. The position parameter is what brings out the its sonic character. This can be manually adjusted to find a sweet spot or modulated with the envelope or LFO to introduce movement and interest. Tracker+ operates with a single grain.

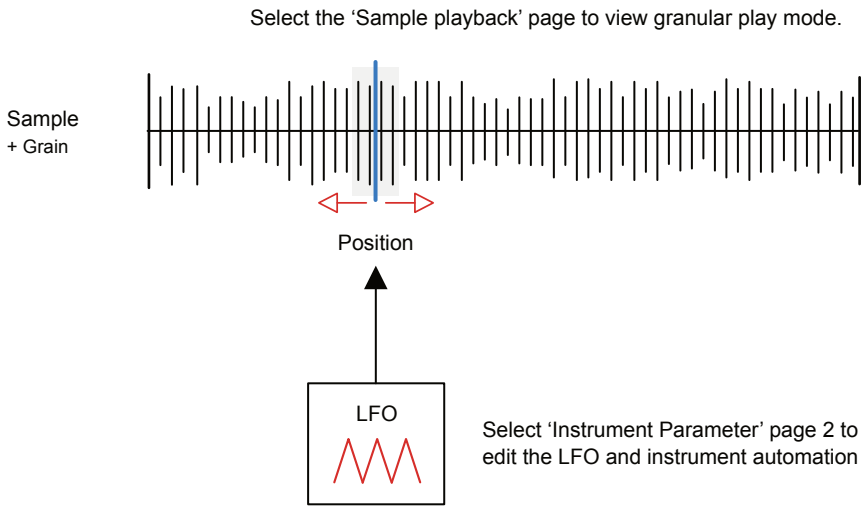


Function	Parameter	Screen Button	Range	Description
Edit	Play Mode	7th & 8th	Modes	Selects the play mode to apply. Includes Wavetable and Granular as well as 1-Shot and the three loop modes.
Aid	Preview	1st		Hold to play the grain from the current position selected. Also hold while adjusting position to 'scan' for the desired sound.
Edit	Position	2nd	Variable	Selects the grain playback position within the sample. This can be manually adjusted to find the desired 'sweet spot' or modulated with an LFO or Envelope for movement and interest.
Edit	Length	3rd	1-1000ms	Sets the width in ms of the grain. This will be the small slice of the sample that is played.
Edit	Shape	4th	Square, Triangle, Gauss	Sets the envelope shape for the grain playback. Particularly pertinent in the attack phase.
Edit	Loop	5th	Forward, Reverse, Pingpong	Selects the grain playback direction.

NOTES

Modulating Granular Position

The granular position can be modulated from within the instrument automation page using an envelope or LFO. This adds movement and interest and creates glitchy or textural sounds



Hold [*Preview*] in the granular page while the LFO is running will display the animated position dynamically in real time.

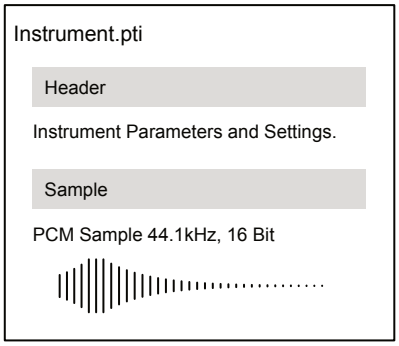
The LFO Speed and granular parameters can have an affect on the sound developed. Also the LFO amount will determine how much of the sample is navigated with varying the position. Small amounts will be more predictable textures and pad like sounds. Larger amount settings will move the position wider in the sample creating more glitchy, less predictable sounds.

6.12 Sharing Sample Instruments

NOTES

Instruments can be shared either with other projects on the same device or by transferring to another Tracker+. This is useful when developing new instruments or ones which will be reused for example to a develop a signature sound across multiple tracks of an album.

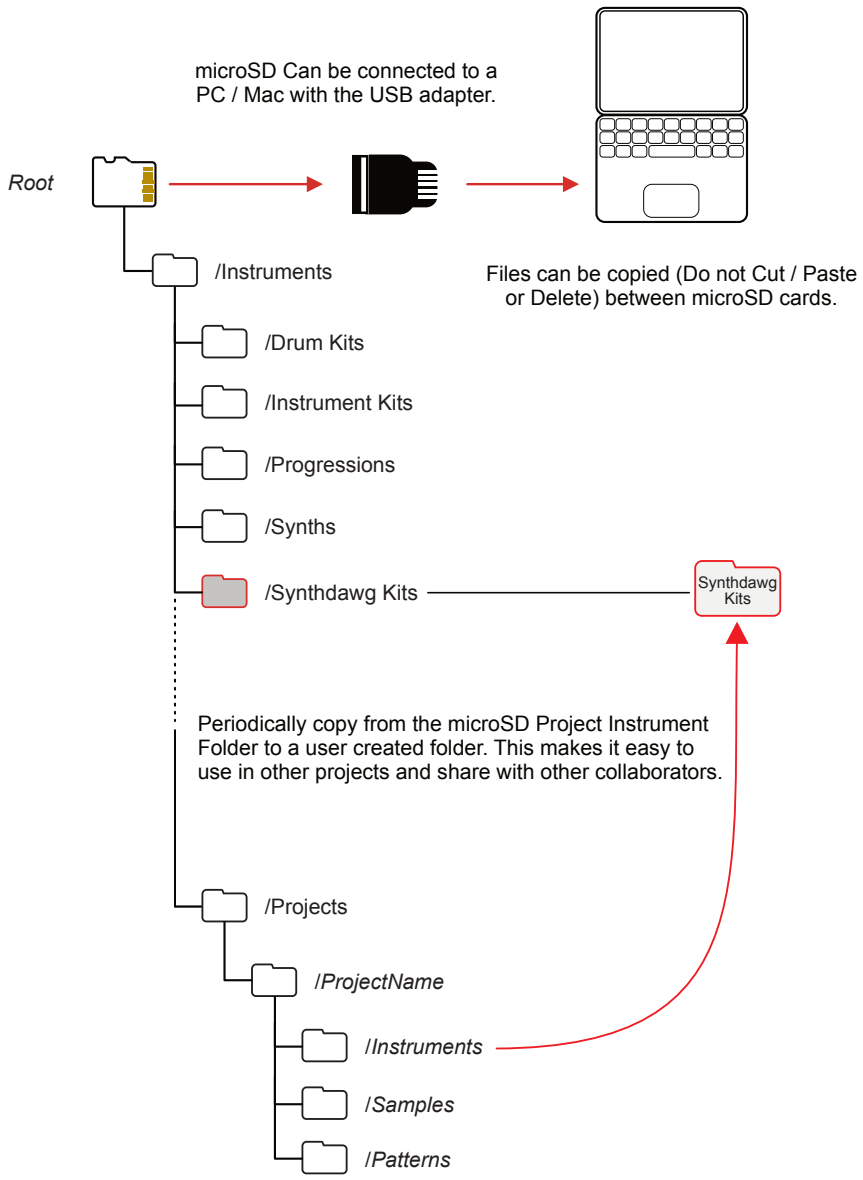
Instruments are saved with a project using a '.pti' file format and are stored in the project subfolder, 'instruments'. The project and instrument folders are accessible from all projects. This is ok if you know where to look and what to look for. Remembering all projects and their instruments is not an easy task. A few tips will help manage a library of instruments. Tracker+ does not have in depth file management functions on board so using a PC or Mac to access the microSD card is required.



A .pti file contains a header ~400 bytes which handles the parameter settings. In addition a sample is included which can vary in size and which is packed into the instrument file.

- Create instruments as normal. Save a project which will also save the instruments into the current project folder. Instruments created or loaded from other projects will be saved with the current project.
- Consider creating a 'user' subfolder within the instruments folder. This can be used to build a library of user instruments.
- A different folder cannot be selected in Tracker+ when saving Instruments. Periodically instruments can be manually copied using a PC / Mac into the 'user' instrument folder on the microSD card. This would be a housekeeping task, maybe combined with backing up the microSD card fully.
- Do not cut or delete the the original instrument from the project as this is where the project recognises the original file to be stored.
- The user folder can easily be shared with collaborators or between devices simply by copying between microSD's with the PC / Mac.

NOTES



Consider a naming convention for user instruments. This is less important when using project contained instruments, but this technique can be helpful when managing a user library. Instruments can be renamed in the ‘sample loader’ page. It is advised to always keep a discipline of naming instruments in Tracker+ rather than on the PC/Mac to protect the .pti file integrity and to make future access easier.

6.13 Synthesizer Options

NOTES

Tracker+ has 3 synthesizer slots each of which can be assigned 1 of 5 synthesizer models. Each synthesizer has six editable, model dependant macros directly available within the knob section and which contribute to the overall synth patch.

ACD

ACD™ transports you back to the golden age of electronic music with its recreation of iconic single-oscillator monophonic analog synths. Paying homage to Japanese legends, ACD not only captures the essence of these classics but also propels you into the future with a lightning-fast synthesis experience. It offers a rich palette of options, ranging from faithful monophonic analog recreations to entirely unique and innovative soundscapes.

FAT

FAT™ is a powerhouse synth engine that epitomizes the lush, vintage warmth of classic analog synthezisers. At its core, FAT hosts three virtual analog oscillators and offers an intuitive drift and detune control, ensuring you can effortlessly sculpt iconic massive sounds. The presets contain two distinct flavors of ladder filters inspired by two unique analog classics. It offers a versatile range of sounds, from deep reese basses to ethereal pads, expressive leads and classic keyboards.

VAP

VAP™ is a virtual analog polysynth, boasting a dual-oscillator architecture and a versatile modulation matrix. Complete with multiple filter flavors and pulse width modulation, VAP allows you to sculpt intricate patterns. This engine shines when it comes to creating mesmerizing, evolving textures, crafting lush pads, and conjuring up one-of-a-kind sound effects.

WTFM

WTFM™ is a unique 2-operator FM synth engine that utilized wavetable based oscillators driven by a 3x feedback system. The operators are based on sweeping wavetables, ranging from fundamental sine waves to harmonically rich timbres, offering a diverse tonal palette. Whether you're sculpting smooth, enveloping pads or crafting cutting-edge metallic tones, WTFM empowers you to achieve unique textures with precision and authenticity.

PERC

PERC™ is a unique drum machine that is loaded into one synth engine instrument. It uses 1 voice but can play back up to five unique drum sounds at once. Drums include a Kick, Tom, Snare, open and closed Hi-Hats, Cymbal, and Perc. The perc drum has multiple options including snare, clap, cowbell and more. Each drum is individually tweakable with multiple parameters for each hit, for a massive variety of drum tones.

Hold [Instrument] to select a synth for the step. On a synth instrument step to select the synth to assign a model, Press [Instrument Parameters]. Select from the available synth models to assign per slot or load a synth patch.

More new synth models will be added to the Tracker+ option list in future OS updates.

NOTES

SELECTING A SYNTH AND MODEL

1. Ensure the project in which to work is open and active and a pattern selected for editing.

2. Press [Rec] to select edit mode.

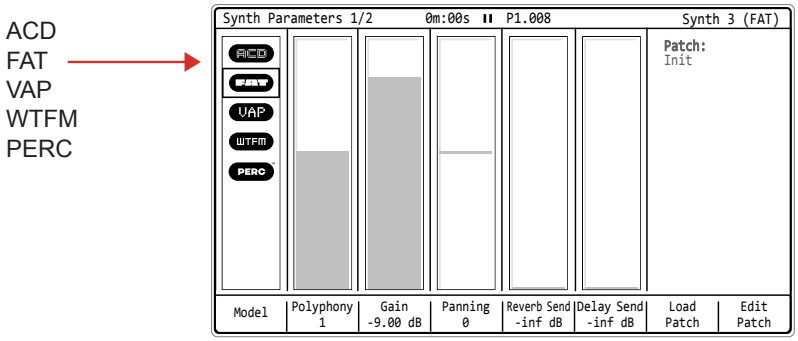
3. Select a synth for the step instrument. On the desired step, Hold [Instrument] + Turn (Jog) or use arrows to select Synth 1, Synth 2 or Synth 3 instrument slot.

4. The selected Synth and its currently assigned model will be applied to the step when the button is released. Synths can be applied on steps for any of the 16 tracks.

5. To edit the synth and change the model for the synth on the selected step, Press [Instrument Parameters]. Ensure page 1 of 2 is selected.

6. Press [*Model*] to cycle and select the synth model for the selected slot.

7. A synth patch can also be loaded if required by pressing [*Load Patch*] and select from the patch list.

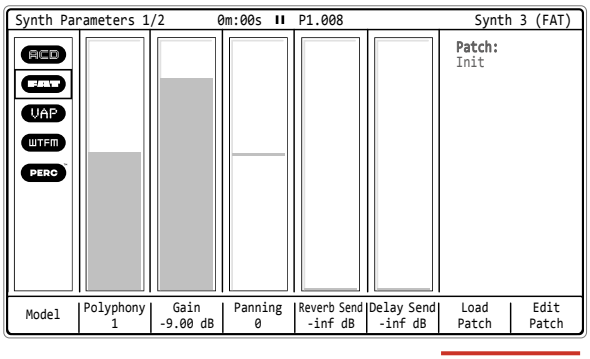


Hold [Instrument] to select a synth for the step. On a synth instrument step to select the synth to assign a model, Press [Instrument Parameters]. Select from the available synth models to assign per slot or load a synth patch.

NOTES

CONFIGURING A SYNTHESIZER

1. Ensure the project in which to work is open and active.
2. Select or create a step with one of the 3 synth slots to edit.
3. To edit the synth and change the model for the synth on the selected step, Press [Instrument Parameters]. Ensure page 1 of 2 is selected.
4. Press [*Model*] to cycle and select the synth model for the selected slot.
5. To edit the Page 1. Use the screen buttons to select and jog wheel or arrows to change the options:-
   - Model: This selects from the available models to assign to the synth.
   - Polyphony: The number of voices assigned to the synth. Up to 8 voices of polyphony are available in total in Tracker+ across all synths. The 8 voices are divided and allocated per synth, for example Synth 1 = 3, Synth 2 = 3, Synth 3 = 2.
   - Gain: Adjusts the audio gain for the synth.
   - Panning. Adjusts the stereo spread for the synth.
   - The reverb and delay sends for the effects applied
6. The synth macro controls can be found on Page 2 of the instrument parameters for the selected synth.



Patch defined parameter macro's for the synth are available on page 2 of 2 of the synth parameters accessed using the [Instrument Parameters] Button. Also access to the synth patch presets is presented in Page 1.

NOTES

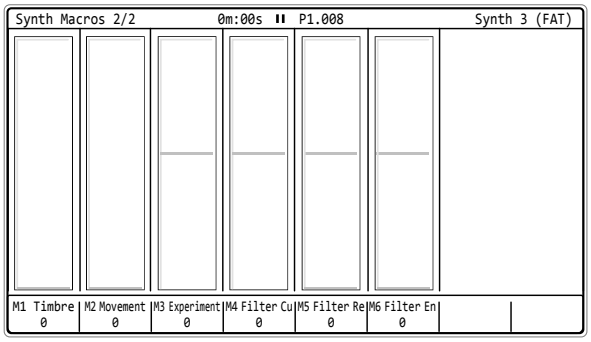
Macros enable a selection of parameters to be elevated to the instrument parameter page for quick and easy access. This will allow on the fly adjustments to help support live performances and sound variations. Tracker+ has 6 available macro slots in the instrument parameter page. Macros are configured within the actual synth model parameters.

ADJUSTING SYNTH MACRO PARAMETERS

1. Ensure the project in which to work is open and active.
2. Select a step with a synth instrument to edit or select a synth from the instrument list. The assigned model and patch will determine the available macros.
3. To access the synth macro controls, Press [Instrument Parameters]. Ensure page 2 of 2 is selected. The second page hosts macros.
4. Synth parameters are assigned to 1-6 macro controls. Press the associated screen button to select the macro value to change, performed with the (Jog) wheel or the arrow keys.

Example Macros

The use of macros allows various parameters to be assigned to the 6 parameters and offers more flexibility with patches that when using fixed parameter assignments. The reverb and delay send are also contained on this page.



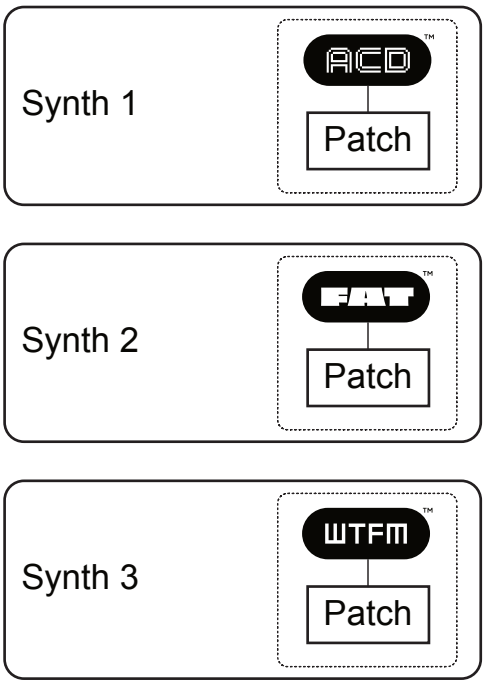
Macro 1	Timbre	Macro 4	Filter Cutoff
Macro 2	Movement	Macro 5	Filter Resonance
Macro 3	Experiment	Macro 6	Filter Env Amount

6.14 Synthesizer Patch Editor Basics

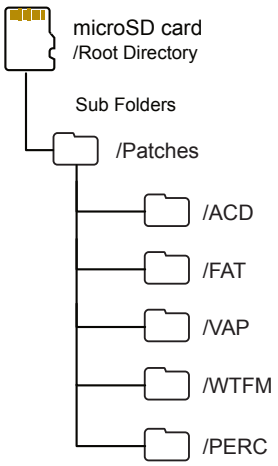
NOTES

Tracker+ has 3 synthesizers which operate with patches to define the precise sound. Each patch will be representative of the synth model assigned. Parameters can be controlled directly from the macro knobs. A patch can be created and edited within Tracker+ patch editor. The macro assignments and parameter settings of the knobs can also be configured for each patch.

3 Synths are available, each can be assigned one of the 6 synth models



The patch editor is located in [Instrument parameters] - Page 1 when a synth slot is selected.



Patches for each synth model are saved to the microSD card and are available to be loaded per synth.

NOTES

OVERVIEW OF SYNTHESIZER BASIC PATCH CONTROLS

1. Ensure the project in which to work is open and active and a pattern selected for editing.

2. To edit the synth and change the model for the synth on the selected step, Press [Instrument Parameters]. Ensure page 1 of 2 is selected.

3. A synth patch can also be loaded if required by pressing [*Load Patch*] and select from the patch list. Ensure the project in which to work is open and active.

4. For patch management:-

   - To load a patch. Press [*Load Patch*] screen button to open the patch browser to select a patch preset to load.

   - To edit the currently selected patch. Press [*Edit Patch*] to open the patch editor and access the settings for the patch parameters including macro assignments. Patches can also be saved and initialised in the editor.

6.15 Editing a Synthesizer Patch

NOTES

A patch can be initialised as a blank starting point and edited to create new sounds. These can then be saved to the microSD card. Each synth model has a number of parameters specific to the engine loaded. The patch editor is accessed via the instrument parameter page.

EDITING A PATCH

1. Ensure the project in which to work is open and active and a pattern selected for editing. Ensure a synth step is selected.

2. To edit the synth and change the model for the synth on the selected step, Press [Instrument Parameters]. Ensure page 1 of 2 is selected.

3. Select the synth model type, Press [*Model*].

4. To edit a patch use the patch editor. Press [*Edit Patch*] to select the patch editor.

    1. Select the synth section to edit, for example the ‘Osc’ section. Press the lit [PAD] respective to the section to select, i.e. Pad 1. Parameters for the selected section are presented on the screen.

    2. Navigate to the parameter to edit using the [Up] and [Down] Arrows The value or setting will be separately presented under the screen button 8.

    3. Change the value to suit the sound design required. Turn (Jog) to change the value of the highlighted parameter.

    4. It is recommended to adjust by ear. Press any unlit [PAD] to audition the sound while editing, e.g. Pad 5.

    5. This may be iterative across multiple parameters to hone in and develop the sound.

5. To store the sound in the patch list on the microSD card, select ‘Save’ or ‘Save As’ from the screen buttons. Save As will also present the option to change the name.

NOTES

INITIALISING A PATCH

1. Ensure the project in which to work is open and active and a pattern selected for editing. Ensure a synth step is selected.

2. To edit the synth and change the model for the synth on the selected step, Press [Instrument Parameters]. Ensure page 1 of 2 is selected.

3. Select the synth model type, Press [*Model*].

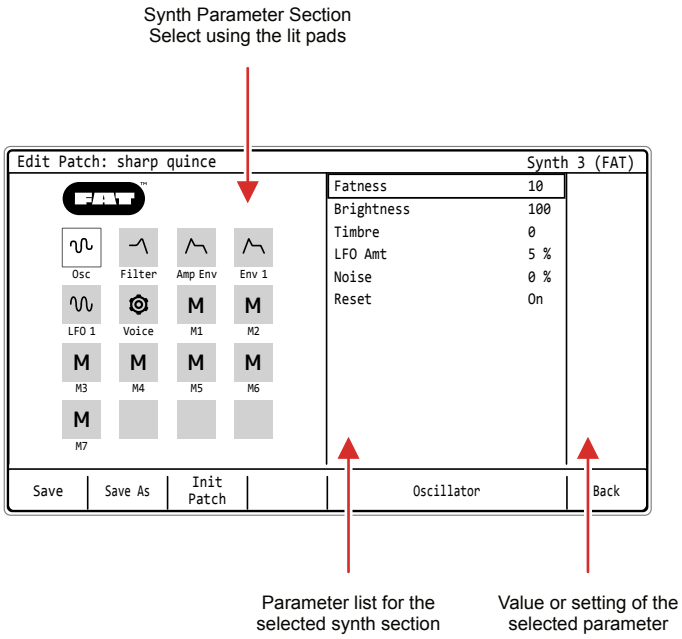
4. To create a blank patch use the patch editor. Press [*Edit Patch*] to select the patch editor.

    1. Press [*Init Patch*] screen button to load the blank patch template.

    2. Press [*Yes*] to confirm loading the initialisation patch or [*No*] to cancel without loading a new patch.

    3. A patch can then be edited to design a sound.

5. To store the sound in the patch list on the microSD card, select ‘Save’ or ‘Save As’ from the screen buttons. Save As will also present the option to change the name.



NOTES

Each synth model, FAT, VAP, WTFM, ACD or PERC has a designated set of parameters whose values define the patch sound.

ACD™

Function	Parameter	Range	Description
Oscillator	Saw Mix	0-100%	Saw wave mix
Oscillator	Square Mix	0-100%	Square wave mix
Oscillator	Sub Mix	0-100%	Sub oscillator mix
Oscillator	Noise Mix	-100% to 100%	Noise generator mix
Oscillator	PW	0-100%	Pulse Width
Oscillator	Sub Mode	Options	Sub oscillator options for square, pulse and triangle waves -1 or -2 octaves below the main oscillator
Oscillator	Pitch LFO	-100% to 100%	Amount of the LFO modulation applied to the oscillator pitch.
Oscillator	PW Env	-100% to 100%	Pulse width envelope.
Oscillator	PW LFO	-100% to 100%	Amount of the LFO modulation applied to the oscillator pulse width I.e pulse width modulation.
Filter	Cutoff	20Hz - 20kHz	Filter cutoff frequency.
Filter	Resonance	0-100%	Filter resonance amount.
Filter	Type	Options	Filter types: Low Pass State Variable 12dB; Low Pass State Variable 24dB; Low Pass RD3.
Filter	Env amt	-100% to 100%	Filter envelope amount
Filter	Note track	-200% to 200%	Amount of modulation applied based on the pitch of the note played.
Filter	LFO amt	-100% to 100%	Low Frequency Oscillator modulation amount applied to the filter
Amplifier	Attack	0.00-10 Sec	Amplifier envelope attack time
Amplifier	Decay	0.00-10 Sec	Amplifier envelope decay time
Amplifier	Sustain	0.00-100%	Amplifier envelope sustain level
Amplifier	Release	0.00-10 Sec	Amplifier envelope release time

NOTES

ACD™ Continued

Function	Parameter	Range	Description
Modulation	Attack	0.00-10 Sec	Modulation envelope attack time
Modulation	Decay	0.00-10 Sec	Modulation envelope decay time
Modulation	Sustain	0.00-100%	Modulation envelope sustain level
Modulation	Release	0.00-10 Sec	Modulation envelope release time
Modulation	Frequency	0.1 to 100Hz	Speed of the modulation wave
Modulation	Waveform	Options	Modulation wave shape: Triangle; Sin; Ramp Up; Ramp Down; Square; Random S&H
Modulation	Retrigger	Options	Waveform retrigger: Free running will continuously run; One Shot will cycle once when a note is triggered; Note will trigger from the start and continuously run each time a note is triggered.
Voice	Glide Mode	Options	Slide between notes: Always, Overlap, Legato i.e. Envelopes are not triggered, Legato Overlap
Voice	Glide Time	0.00 - 3 Sec	Time of slide between notes.
Voice	Volume	0-200%	Volume level of oscillator voice

Macro options are repeated per Modulation slot.

Function	Parameter	Range	Description
Macro	Macro Name	Editable	Select edit to use naming editor
Macro	Bipolar	On or Off	Selects bipolar on or off for the macro control
Macro	Parameter 1	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 1	-2 to +2	Amount of modulation range applied
Macro	Parameter 2	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 2	-2 to +2	Amount of modulation range applied
Macro	Parameter 3	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 3	-2 to +2	Amount of modulation range applied
Macro	Parameter 4	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 4	-2 to +2	Amount of modulation range applied
Macro	Parameter 5	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 5	-2 to +2	Amount of modulation range applied

NOTES

Function	Parameter	Range	Description
Oscillator	Fatness	0-100	Oscillator style
Oscillator	Brightness	0-100	Oscillator style
Oscillator	Timbre	0-100	Oscillator style
Oscillator	LFO Amt	0-100%	Amount of LFO applied
Oscillator	Noise	0-100%	Amount of Noise applied
Oscillator	Reset	Options	On or Off. On, resets oscillator cycle on each note trigger.
Filter	Cutoff	20Hz - 20kHz	Filter cutoff frequency
Filter	Resonance	0-100%	Filter resonance amount.
Filter	Type	Options	Low Pass MG 24dB, Low Pass OB 24dB, Low Pass OB 12dB classic filter emulations.
Filter	Env Amt	-100% to 100%	Filter envelope amount
Filter	LFO Amt	-100% to 100%	Low Frequency Oscillator modulation amount applied to the filter
Amplifier Env	Attack	0.00-10 Sec	Amplifier envelope attack time
Amplifier Env	Decay	0.00-10 Sec	Amplifier envelope decay time
Amplifier Env	Sustain	0.00-100%	Amplifier envelope sustain level
Amplifier Env	Release	0.00-10 Sec	Amplifier envelope release time
Filter Env	Attack	0.00-10 Sec	Filter envelope attack time
Filter Env	Decay	0.00-10 Sec	Filter envelope decay time
Filter Env	Sustain	0.00-100%	Filter envelope sustain level
Filter Env	Release	0.00-10 Sec	Filter envelope release time
LFO	Frequency	0.1 to 100Hz	Speed of the modulation wave
LFO	Waveform	Options	Modulation waveshape: Triangle; Sin; Ramp Up; Ramp Down; Square; Random S&H
LFO	Retrigger	Options	Waveform retrigger: Free running will continuously run; One Shot will cycle once when a note is triggered; Note will trigger from the start and continuously run each time a note is triggered.

NOTES

FAT™ Continued

Function	Parameter	Range	Description
Voice	Glide Mode	Options	Slide between notes: Always, Overlap, Legato i.e. Envelopes are not triggered, Legato Overlap
Voice	Glide Time	0.00 - 3 Sec	Time of slide between notes.
Voice	Volume	0-200%	Volume level of oscillator voice.

Macro options are repeated per Modulation slot.

Function	Parameter	Range	Description
Macro	Macro Name	Editable	Select edit to use naming editor
Macro	Bipolar	On or Off	Selects bipolar on or off for the macro control
Macro	Parameter 1	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 1	-2 to +2	Amount of modulation range applied
Macro	Parameter 2	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 2	-2 to +2	Amount of modulation range applied
Macro	Parameter 3	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 3	-2 to +2	Amount of modulation range applied
Macro	Parameter 4	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 4	-2 to +2	Amount of modulation range applied
Macro	Parameter 5	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 5	-2 to +2	Amount of modulation range applied

NOTES

VAP™

Function	Parameter	Range	Description
Oscillators	Mix	-100% to 100%	Oscillator mix for VAP.
Oscillators	Shape 1	0-100	Oscillator 1 shape. Setting morphs between triangle, saw and square.
Oscillators	Shape 2	0-100	Oscillator 2 shape. Setting morphs between triangle, saw and square.
Oscillators	PW 1	-50 to 50	Oscillator 1 Pulse Width
Oscillators	PW 2	-50 to 50	Oscillator 2 Pulse Width
Oscillators	Tune 1	-36 to 36 st	Oscillator 1 Tuning in semitones
Oscillators	Tune 2	-36 to 36 st	Oscillator 2 Tuning in semitones
Oscillators	Finetune	-100 to 100	Finetuning in cents
Oscillators	Detune	0-100 c	Detuning in cents
Oscillators	Noise	0-100%	Noise amount
Oscillators	Sync	Options	When set to On, Oscillator 2 resets on each cycle of Oscillator 1 (Osc 1 controls pitch).
Oscillators	Reset 1	Options	Oscillator 1 wave reset on note on, on or off
Oscillators	Reset 2	Options	Oscillator 2 wave reset on note on, on or off
Filter	Cutoff	20Hz - 20kHz	Filter cutoff frequency.
Filter	Resonance	0-100%	Resonance amount.
Filter	Type	Options	Low Pass MG 24dB, Low Pass OB 24dB, Low Pass OB 12dB, Low Pass SVF 24dB, Low Pass SVF 12dB, Hi Pass OB 24dB, Hi Pass OB 12dB, Hi Pass SVF 24dB, Hi Pass SVF 12dB, Band Pass OB 24dB, Band Pass OB 12dB, Band Pass SVF 24dB, Band Pass SVF 12dB, Notch SVF 24dB, Notch SVF 12dB,
Filter	Env Amt	-100% to 100%	Filter envelope amount
Filter	Note track	-200% to 200%	Amount of modulation applied based on the pitch of the note played.

NOTES

VAP™ Continued

Function	Parameter	Range	Description
Amplifier Env	Attack	0.00-10 Sec	Amplifier envelope attack time
Amplifier Env	Decay	0.00-10 Sec	Amplifier envelope decay time
Amplifier Env	Sustain	0.00-100%	Amplifier envelope sustain level
Amplifier Env	Release	0.00-10 Sec	Amplifier envelope release time
Envelope 1	Attack	0.00-10 Sec	Amplifier envelope attack time
Envelope 1	Decay	0.00-10 Sec	Amplifier envelope decay time
Envelope 1	Sustain	0.00-100%	Amplifier envelope sustain level
Envelope 1	Release	0.00-10 Sec	Amplifier envelope release time
Envelope 2	Attack	0.00-10 Sec	Amplifier envelope attack time
Envelope 2	Decay	0.00-10 Sec	Amplifier envelope decay time
Envelope 2	Sustain	0.00-100%	Amplifier envelope sustain level
Envelope 2	Release	0.00-10 Sec	Amplifier envelope release time
LFO 1	Sync	Options	When set to On, Oscillator 2 resets on each cycle of Oscillator 1 (Osc 1 controls pitch).
LFO 1	Ratio	0-100 Hz	
LFO 1	Waveform	Options	Modulation wave shape: Triangle; Sin; Ramp Up; Ramp Down; Square; Random S&H
LFO 1	Retrigger	Options	Waveform retrigger: Free running will continuously run; One Shot will cycle once when a note is triggered; Note will trigger from the start and continuously run each time a note is triggered.
LFO 2	Sync	Options	When set to On, Oscillator 2 resets on each cycle of Oscillator 1 (Osc 1 controls pitch).
LFO 2	Ratio	0-100 Hz	
LFO 2	Waveform	Options	Modulation wave shape: Triangle; Sin; Ramp Up; Ramp Down; Square; Random S&H
LFO 2	Retrigger	Options	Waveform retrigger: Free running will continuously run; One Shot will cycle once when a note is triggered; Note will trigger from the start and continuously run each time a note is triggered.

NOTES

VAP™ Continued

Function	Parameter	Range	Description
Modulation	Src 1	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 1	Options	Modulation destination options: Osc1 PWM; Osc2 PWM; Osc Mix; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env SustainVolume; Osc1 Pitch; Osc2 Pitch; Filter Env Decay; Noise Volume; Osc1 Shape; Osc2 Shape
Modulation	Amt 1	-100% to 100%	Modulation amount
Modulation	Src 2	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 2	Options	Modulation destination options: Osc1 PWM; Osc2 PWM; Osc Mix; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env SustainVolume; Osc1 Pitch; Osc2 Pitch; Filter Env Decay; Noise Volume; Osc1 Shape; Osc2 Shape
Modulation	Amt 2	-100% to 100%	Modulation amount
Modulation	Src 3	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 3	Options	Modulation destination options: Osc1 PWM; Osc2 PWM; Osc Mix; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env SustainVolume; Osc1 Pitch; Osc2 Pitch; Filter Env Decay; Noise Volume; Osc1 Shape; Osc2 Shape
Modulation	Amt 3	-100% to 100%	Modulation amount
Modulation	Src 4	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 4	Options	Modulation destination options: Osc1 PWM; Osc2 PWM; Osc Mix; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env SustainVolume; Osc1 Pitch; Osc2 Pitch; Filter Env Decay; Noise Volume; Osc1 Shape; Osc2 Shape
Modulation	Amt 4	-100% to 100%	Modulation amount
Modulation	Src 5	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 5	Options	Modulation destination options: Osc1 PWM; Osc2 PWM; Osc Mix; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env SustainVolume; Osc1 Pitch; Osc2 Pitch; Filter Env Decay; Noise Volume; Osc1 Shape; Osc2 Shape
Modulation	Amt 5	-100% to 100%	Modulation amount

NOTES

VAP™ Continued

Function	Parameter	Range	Description
Modulation	Src 6	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 6	Options	Modulation destination options: Osc1 PWM; Osc2 PWM; Osc Mix; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env SustainVolume; Osc1 Pitch; Osc2 Pitch; Filter Env Decay; Noise Volume; Osc1 Shape; Osc2 Shape
Modulation	Amt 6	-100% to 100%	Modulation amount
Voice	Glide Mode	Options	Slide between notes: Always, Overlap, Legato i.e. Envelopes are not triggered, Legato Overlap
Voice	Glide Time	0.00 - 3 Sec	Time of slide between notes.
Voice	Volume	0-200%	Volume level of oscillator voice.

Macro options are repeated per Modulation slot.

Function	Parameter	Range	Description
Macro	Macro Name	Editable	Select edit to use naming editor
Macro	Bipolar	On or Off	Selects bipolar on or off for the macro control
Macro	Parameter 1	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 1	-2 to +2	Amount of modulation range applied
Macro	Parameter 2	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 2	-2 to +2	Amount of modulation range applied
Macro	Parameter 3	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 3	-2 to +2	Amount of modulation range applied
Macro	Parameter 4	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 4	-2 to +2	Amount of modulation range applied
Macro	Parameter 5	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 5	-2 to +2	Amount of modulation range applied

NOTES

WTFM™

Function	Parameter	Range	Description
Oscillator	FM	0% to 1000%	Frequency Modulation
Oscillator	Ratio 1	0.25 - 12	Oscillator 1 FM Ratio
Oscillator	Ratio 2	0.25 - 12	Oscillator 2 FM Ratio
Oscillator	Shape 1	0-100	Position in the wavetable of Osc 1 shapes
Oscillator	Shape 2	0-100	Position in the wavetable of Osc 2 shapes
Oscillator	Character 1	Options	Row of wavetable shapes: Smoother; Sharper; Wilder; Add 1; Add 2; Add 3; Add 5; Add 7; Add 11
Oscillator	Character 2	Options	Row of wavetable shapes: Smoother; Sharper; Wilder; Add 1; Add 2; Add 3; Add 5; Add 7; Add 11
Oscillator	Feedback 1	0-100%	Operator 1 Feedback
Oscillator	Feedback 2	0-100%	Operator 2 Feedback
Oscillator	Feedback2>1	0-100%	Operator 2 into 1 Feedback
Oscillator	Finetune 1	-100 to 100 c	Finetuning in cents of operator 1
Oscillator	Finetune 2	-100 to 100 c	Finetuning in cents of operator 2
Oscillator	Reset 1	Options	Oscillator 1 wave reset on note on, on or off
Oscillator	Reset 2	Options	Oscillator 2 wave reset on note on, on or off
Oscillator	Oversampling	Options	Pre-filter x2 oversampling on or off.
Filter	Cutoff	20Hz - 20kHz	Filter cutoff frequency
Filter	Resonance	0-100%	Resonance
Filter	Type	Options	Low Pass MG 24dB, Low Pass OB 24dB, Low Pass OB 12dB, Low Pass SVF 24dB, Low Pass SVF 12dB, Hi Pass OB 24dB, Hi Pass OB 12dB, Hi Pass SVF 24dB, Hi Pass SVF 12dB, Band Pass OB 24dB, Band Pass OB 12dB, Band Pass SVF 24dB, Band Pass SVF 12dB, Notch SVF 24dB, Notch SVF 12dB,
Filter	Env Amt	-100% to 100%	Filter envelope amount
Filter	Note Track	-200% to 200%	Amount of modulation applied based on the pitch of the note played.

NOTES

WTFM™ Continued

Function	Parameter	Range	Description
Amplifier Env	Attack	0.00-10 Sec	Amplifier envelope attack time
Amplifier Env	Decay	0.00-10 Sec	Amplifier envelope decay time
Amplifier Env	Sustain	0.00-100%	Amplifier envelope sustain level
Amplifier Env	Release	0.00-10 Sec	Amplifier envelope release time
Envelope 1	Attack	0.00-10 Sec	Amplifier envelope attack time
Envelope 1	Decay	0.00-10 Sec	Amplifier envelope decay time
Envelope 1	Sustain	0.00-100%	Amplifier envelope sustain level
Envelope 1	Release	0.00-10 Sec	Amplifier envelope release time
Envelope 2	Attack	0.00-10 Sec	Amplifier envelope attack time
Envelope 2	Decay	0.00-10 Sec	Amplifier envelope decay time
Envelope 2	Sustain	0.00-100%	Amplifier envelope sustain level
Envelope 2	Release	0.00-10 Sec	Amplifier envelope release time
LFO 1	Sync	Options	When set to On, Oscillator 2 resets on each cycle of Oscillator 1 (Osc 1 controls pitch).
LFO 1	Ratio	0-100 Hz	
LFO 1	Waveform	Options	Modulation wave shape: Triangle; Sin; Ramp Up; Ramp Down; Square; Random S&H
LFO 1	Retrigger	Options	Waveform retrigger: Free running will continuously run; One Shot will cycle once when a note is triggered; Note will trigger from the start and continuously run each time a note is triggered.
LFO 2	Sync	Options	When set to On, Oscillator 2 resets on each cycle of Oscillator 1 (Osc 1 controls pitch).
LFO 2	Ratio	0-100 Hz	
LFO 2	Waveform	Options	Modulation wave shape: Triangle; Sin; Ramp Up; Ramp Down; Square; Random S&H
LFO 2	Retrigger	Options	Waveform retrigger: Free running will continuously run; One Shot will cycle once when a note is triggered; Note will trigger from the start and continuously run each time a note is triggered.

NOTES

WTFM™ Continued

Function	Parameter	Range	Description
Modulation	Src 1	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 1	Options	Modulation destination options: Osc1 Pitch; Osc2 Pitch; Op1 Shape; Op2 Shape; Op1 Feedback; Op2 Feedback; Op21 Feedback; FM; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env Sustain; Volume; Filter Env Decay.
Modulation	Amt 1	-100% to 100%	Modulation amount
Modulation	Src 2	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 2	Options	Modulation destination options: Osc1 Pitch; Osc2 Pitch; Op1 Shape; Op2 Shape; Op1 Feedback; Op2 Feedback; Op21 Feedback; FM; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env Sustain; Volume; Filter Env Decay.
Modulation	Amt 2	-100% to 100%	Modulation amount
Modulation	Src 3	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 3	Options	Modulation destination options: Osc1 Pitch; Osc2 Pitch; Op1 Shape; Op2 Shape; Op1 Feedback; Op2 Feedback; Op21 Feedback; FM; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env Sustain; Volume; Filter Env Decay.
Modulation	Amt 3	-100% to 100%	Modulation amount
Modulation	Src 4	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 4	Options	Modulation destination options: Osc1 Pitch; Osc2 Pitch; Op1 Shape; Op2 Shape; Op1 Feedback; Op2 Feedback; Op21 Feedback; FM; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env Sustain; Volume; Filter Env Decay.
Modulation	Amt 4	-100% to 100%	Modulation amount
Modulation	Src 5	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 5	Options	Modulation destination options: Osc1 Pitch; Osc2 Pitch; Op1 Shape; Op2 Shape; Op1 Feedback; Op2 Feedback; Op21 Feedback; FM; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env Sustain; Volume; Filter Env Decay.
Modulation	Amt 5	-100% to 100%	Modulation amount

NOTES

WTFM™

Continued

Function	Parameter	Range	Description
Modulation	Src 6	Options	Modulation source options: Amp Env; Env1 (fltr); Env2; LFO1; LFO2
Modulation	Dest 6	Options	Modulation destination options: Osc1 Pitch; Osc2 Pitch; Op1 Shape; Op2 Shape; Op1 Feedback; Op2 Feedback; Op21 Feedback; FM; Filter Cutoff; Amp Env Sustain; Filter Env Sustain; Wave Env Sustain; Volume; Filter Env Decay.
Modulation	Amt 6	-100% to 100%	Modulation amount
Voice	Glide Mode	Options	Slide between notes: Always, Overlap, Legato i.e. Envelopes are not triggered, Legato Overlap
Voice	Glide Time	0.00 - 3 Sec	Time of slide between notes.
Voice	Volume	0-200%	Volume level of oscillator voice

Macro options are repeated per Modulation slot.

Function	Parameter	Range	Description
Macro	Macro Name	Editable	Select edit to use naming editor
Macro	Bipolar	On or Off	Selects bipolar on or off for the macro control
Macro	Parameter 1	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 1	-2 to +2	Amount of modulation range applied
Macro	Parameter 2	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 2	-2 to +2	Amount of modulation range applied
Macro	Parameter 3	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 3	-2 to +2	Amount of modulation range applied
Macro	Parameter 4	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 4	-2 to +2	Amount of modulation range applied
Macro	Parameter 5	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 5	-2 to +2	Amount of modulation range applied

NOTES

PERC™

The Kick percussion element is triggered with note C4 in a pattern.

Function	Parameter	Range	Description
Kick	Model	Options	Classic8, Synced8, Classic9
Kick	Pitch	C0-B8	Pitch of kick based on note values.
Kick	Body Wave	Options	Sat-Sin 0%-100%, Triangle 0%-100%, Square 0%-100%, Square FM 0%-100%, FM1 0%-100%, FM3 0%-100%, FM7 0%-100%, FM 11 0%-100%, tzFM1 0%-100%, txFM3 0%-100%, tzFM7 0%-100%, txFM11 0%-100%, Glitch 1 0%-100%, Glitch 2 0%-100%, Glitch 3 0%-100%, Glitch 4 0%-100%
Kick	Body Attack	0-10 ms	Attack stage time of kick transient
Kick	Body Decay	0-10 Sec	Decay stage time of kick transient
Kick	Mod Decay	0-10 Sec	Modulation decay time
Kick	Mod Amount	-100 to +100	Modulation amount applied
Kick	Transient Timbre	-100 to +100	Timbre sound characteristic of transient
Kick	Transient Level	0-100%	Level setting of transient

The Toms percussion elements are triggered with notes C0-B3, C5+ in a pattern.

Function	Parameter	Range	Description
Toms	Model	Options	Classic, Classic+, Resonant
Toms	Body Wave	Options	Sat-Sin 0%-100%, Triangle 0%-100%, Square 0%-100%, Square FM 0%-100%, FM1 0%-100%, FM3 0%-100%, FM7 0%-100%, FM 11 0%-100%, tzFM1 0%-100%, txFM3 0%-100%, tzFM7 0%-100%, txFM11 0%-100%, Glitch 1 0%-100%, Glitch 2 0%-100%, Glitch 3 0%-100%, Glitch 4 0%-100%
Toms	Body Attack	0-10 ms	Attack stage time of kick transient
Toms	Body Decay	0-10 Sec	Decay stage time of kick transient
Toms	Mod Decay	0-10 Sec	Modulation decay time
Toms	Pitch Mod	-1000 to 1000	Pitch modulation
Toms	Wave Mod	-100 to +100	Modulation amount applied
Toms	Transient Timbre	0-200	Timbre sound characteristic of transient
Toms	Transient Level	0-100%	Level setting of transient

NOTES

PERC™ Continued

The Snare percussion element is triggered with note D4 in a pattern.

Function	Parameter	Range	Description
Snare	Model	Options	Classic8, Classic9, Classic9+, Modern, Modern+
Snare	Pitch	C0-B8	Pitch of snare based on note values.
Snare	Tone	0-100%	Snare tone
Snare	Body Wave	Options	Sat-Sin 0%-100%, Triangle 0%-100%, Square 0%-100%, Square FM 0%-100%, FM1 0%-100%, FM3 0%-100%, FM7 0%-100%, FM 11 0%-100%, tzFM1 0%-100%, txFM3 0%-100%, tzFM7 0%-100%, txFM11 0%-100%, Glitch 1 0%-100%, Glitch 2 0%-100%, Glitch 3 0%-100%, Glitch 4 0%-100%
Snare	Body Decay	0-10 Sec	Decay stage time of snare transient
Snare	Snap Attack	0-10 ms	Attack stage time of snare snap
Snare	Snap Decay	0-10 Sec	Snap decay time
Snare	Snap Timbre	0-100%	Timbre sound characteristic of snap stage
Snare	Body/Snap Mix	-100 to +100	Balance of snap and body tones

The Hi Hat percussion elements are triggered with notes E4-G4 in a pattern.

Function	Parameter	Range	Description
Hi Hat	Model	Options	Classic, FM
Hi Hat	Timbre	0-24	Timbre sound characteristic
Hi Hat	Closed Decay	0-10 Sec	Decay stage time of open hi hat
Hi Hat	Open Decay	0-10 Sec	Decay stage time of closed hi hat
Hi Hat	Decay Shape	0-100%	Shape of decay curve
Hi Hat	HPF Cutoff	10Hz - 20kHz	High pass filter cutoff frequency
Hi Hat	LPF Cutoff	10Hz - 20kHz	Low pass filter cutoff frequency
Hi Hat	Tone Pitch	100 - 880Hz	Pitch in Hz of the Hi Hat Tone stage
Hi Hat	Tone/Noise Mix	-100 to +100	Balance of hi hat noise and tone

NOTES

PERC™ Continued

The Cymbal percussion element is triggered with note A4 in a pattern.

Function	Parameter	Range	Description
Cymbal	Model	Options	Classic, FM
Cymbal	Timbre	0-24	Timbre sound characteristic
Cymbal	Body Filter	500Hz-10kHz	Frequency of body stage
Cymbal	Impact Filter	500Hz-10kHz	Frequency of impact stage
Cymbal	Body Decay	0-10 Sec	Decay time of body stage
Cymbal	Impact Decay	0-10 Sec	Decay time of impact stage
Cymbal	Tone Pitch	80Hz-880Hz	Tone in Hz
Cymbal	Tone/Noise Mix	-100 to +100	Balance of cymbal noise and tone
Cymbal	Impact/Body Mix	-100 to +100	Balance of cymbal impact and body stage

The other Percussion elements are triggered with notes B4 in a pattern.

Function	Parameter	Range	Description
Percussion	Model	Options	Clap, Clap+, Maracas, Shaker, Cowbell
Percussion	Variation	0-100	Variation of the percussion sound
Percussion	Timbre	0-100	Timbre tone character
Percussion	Decay	0-2 Sec	Decay stage time of the percussion element

NOTES

PERC™

Continued

Function	Parameter	Range	Description
Mixer	Kick Level	0-200	Volume level
Mixer	Kick Pan	L100-R100	Stereo panning left to right
Mixer	Kick Delay	0-100	Delay send
Mixer	Kick Reverb	0-100	Reverb send
Mixer	Kick Level	Options	Main, Post Overdrive, Post EQ
Mixer	Tom Level	0-200	Volume level
Mixer	Tom Pan	L100-R100	Stereo panning left to right
Mixer	Tom Delay	0-100	Delay send
Mixer	Tom Reverb	0-100	Reverb send
Mixer	Tom Level	Options	Main, Post Overdrive, Post EQ
Mixer	Snare Level	0-200	Volume level
Mixer	Snare Pan	L100-R100	Stereo panning left to right
Mixer	Snare Delay	0-100	Delay send
Mixer	Snare Reverb	0-100	Reverb send
Mixer	Snare Level	Options	Main, Post Overdrive, Post EQ
Mixer	Hi Hat Level	0-200	Volume level
Mixer	Hi Hat Pan	L100-R100	Stereo panning left to right
Mixer	Hi Hat Delay	0-100	Delay send
Mixer	Hi Hat Reverb	0-100	Reverb send
Mixer	Hi Hat Level	Options	Main, Post Overdrive, Post EQ

Function	Parameter	Range	Description
FX	Waveshaper Type	Options	Saturate, Overdrive, Overdrive+, Bitcrush, Bitcrush+
FX	Waveshaper Level	0-100	Volume level of waveshaper
FX	EQ Low 80Hz	-18dB to +18dB	Boost or attenuate in dB at 80Hz
FX	EQ Mid 2.5kHz	-18dB to +18dB	Boost or attenuate in dB at 2.5kHz
FX	EQ High 12kHz	-18dB to +18dB	Boost or attenuate in dB at 12kHz

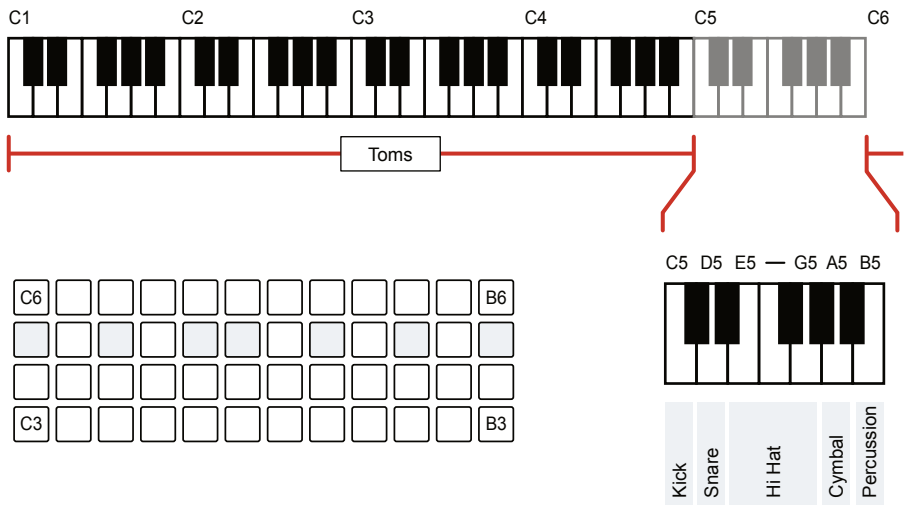
NOTES

PERC™ Continued

Macro options are repeated per Modulation slot.

Function	Parameter	Range	Description
Macro	Macro Name	Editable	Select edit to use naming editor
Macro	Bipolar	On or Off	Selects bipolar on or off for the macro control
Macro	Parameter 1	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 1	-2 to +2	Amount of modulation range applied
Macro	Parameter 2	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 2	-2 to +2	Amount of modulation range applied
Macro	Parameter 3	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 3	-2 to +2	Amount of modulation range applied
Macro	Parameter 4	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 4	-2 to +2	Amount of modulation range applied
Macro	Parameter 5	Options	Target parameter options from the synth engine to control with the macro.
Macro	Amount 5	-2 to +2	Amount of modulation range applied

Summary of Note Assignments



NOTES

6.16 PERC Synthesizer Notes

PERC is a unique instrument as part of the synth family for Tracker+. While this is described as a percussion instrument it is a collection of instruments contained in one function and serves to take inspiration from a series of classic drum instruments. Some additional notes are provided.

Kick

Classic8 vs Synced8 model - Synched8 resets the oscillator for each note, resulting in a predictable transient, but can click when notes overlap. Classic, as in the TR-808, does not reset the oscillator, so the transient can be slightly different each time (especially for short Attack times).

Body Wave - sets the wavetable used and baseline position in the wavetable. All wavetables start from a sine wave (at 0%) but end differently (at 100%).

Mod Amount - the amount of modulation by the Mod envelope. In the Classic9 model - pitch is modulated, in the Classic8/Synced8 wavetable position is modulated.

Transient Timbre - the transient is an impulse (for positive values of the parameter) or a short burst of noise (for negative values) that is then passed to a LP filter. The absolute value of the parameter sets the cutoff of the filter (0 -> 30 Hz, -1/1 -> 4 kHz). Negative values make the transient to be different each time (the noise burst is generated for each trigger).

Tom

Models - Classic is a single oscillator, inspired by the TR-808, and Classic+ adds a noise transient. Resonant is based on 3 detuned oscillators like the TR-909, with the same noise transient.

Body Wave - same as in the kick.

Pitch Mod / Wave Mod - see Mod Amount in the kick, except that both can be set independently of the model.

Transient Timbre - sets the cutoff of a LPF, that filters white noise (constant noise, not a burst as in the kick).

NOTES

Snare

The models differ in how filters and oscillators are configured (including pitch modulation). It's best to just listen to the differences. The names are also a hint :).

Tone sets the balance between oscillators of the body.

Body Wave - same as Kick/Tom (wave position is not modulated) Snap Timbre - cutoff frequencies of snap part filters.

Hihat and Cymbal

Model - Classic is based on 6 square oscillators, based on TR-808, FM is an 2-op FM oscillator. Both add white noise.

Timbre - sets either relative tuning of the square oscillators or a preset configuration of the FM algorithm. A value of 12 is a good starting point and is the best match of TR-808.

Perc

Velocity values 0-100 affect volume and values 100-127 have an extra accent effect, depending on the part (e.g. shortening envelope, changing mix of components).

Velocity macro should not be used, it will work the same regardless of the note triggered.

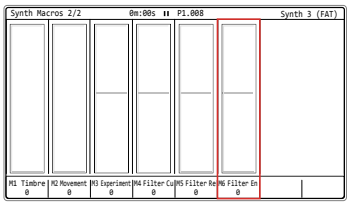
As with all synths and PERC is no different, it is recommended to concentrate on sound design through the act and art of tweaking and adjusting parameters and listening to the sound as it evolves. The underlying parameters and how they work is useful, but the true spirit of the sound design process would always start by ear.

NOTES

6.17 Synthesizer Macros

Each patch has a number of parameters that are assigned to macros. A macro therefore will control this group of parameters collectively when adjusting a single macro control. Macros are assigned and range mapped as part of the patch accessible from the Instrument Parameters.

Structure of a Macro
Example: Instrument Parameter Page 2 of 2, Macro 6 Mapping for ACD



Macro 6 Filter Env Amount

Macro Name	**'Filter env amount'**	*Name which appears on the display*
Bipolar	**On**	*Knob range On -63 to +64, Off 0-127*
Parameter 1	**Env amt**	*Parameter that the knob will affect*
Amount 1	**0.00**	*Starting value multiplier*
Parameter 2	Unassigned	*Parameter that the knob will affect*
Amount 2	0.00	*Starting value multiplier*
Parameter 3	Unassigned	*Parameter that the knob will affect*
Amount 3	0.00	*Starting value multiplier*
Parameter 4	Unassigned	*Parameter that the knob will affect*
Amount 4	0.00	*Starting value multiplier*
Parameter 5	Unassigned	*Parameter that the knob will affect*
Amount 5	0.00	*Starting value multiplier*

A macro is controlled by one parameter function but can change up to 5 parameters. These are mapped in the patch editor. The starting point is the value as assigned in the patch which also contributes to determining the range of the value change. The control knob for each macro operates over a defined range of 0-127 or -63 to 64 if a bipolar range option is set. The amount acts as a 'multiplier' to the patch value.

7

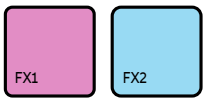
FX Steps

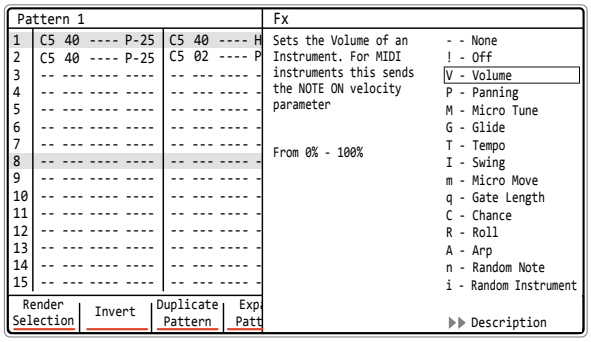
It is important to get a good understanding of all four elements of a step. This will help to get the most from step sequencing. This section provides a deeper dive into the two FX slots. FX slots have access to a library of 37 effects that are applied in a somewhat different way to the normal expectation. These can deploy both audio and MIDI applications to modulate and control. Also traditional effects such as delay can be assigned. These can be applied step by step giving intimate control over each step and when built together with other steps offers a very creative option in Tracker+. These are very powerful and without doubt are worth the time and learning investment to get to know the range and application of effects available. It is important to recognise that step effects are different to the general instrument and master effects provided. These work in a more traditional, inline and send configuration while the step FX are polarised to the step itself or to the pattern in which it is operating. Some step FX are even applied to all tracks for example Tempo. The help descriptions that is provided for each individual effect and found in the Tracker+ FX selection page is somewhat useful, but only as a quick reference. This section aims to take a FX focussed view and gives a more detailed reference along with some practical and simple examples of applying FX into a pattern.

7.1 Step FX Descriptions

NOTES

Step FX are a collection of 37 effect types that can be applied into one of two step locations using the dedicated Step FX buttons. Creative step patterns can be generated by applying and also combining. FX do not always need a note and instrument in the same step event. For example, filter cutoff can adjust the cutoff value, applied to previous triggered note. The Step library also provides some brief information on each effect.





ACCESSING THE EFFECT DESCRIPTIONS

1. Press [Pattern] to select the pattern mode page.
2. Select a blank or existing step event.
3. Hold [FX1] or [FX2] + Press Screen Button 7 or 8. This toggles the description window open or closed.
4. Scroll to select effect while holding the FX button + Turn (Jog). The description provided will represent the FX highlighted in the list.
5. If in REC mode the FX will be selected for the step from within this menu list.

When adjusting the value with the jog control for an FX slot with an instrument loaded to the step, the audio applied through the effect will be automatically previewed.

NOTES

7.2 Step FX Reference

The effects are contained into a library of 37 FX types which can be selected into the step. The details for each effect varies depending on its function. Also the interaction with other steps or the note or instrument may be relevant for some effects. The descriptions are built into the FX menu, but these are limited in the descriptions. A deeper understanding of the FX is beneficial and brings more clarity to what at first glance can be confusing.

One effect can be loaded into a step FX slot. Each step has 2 FX slots so a total of two FX are possible. While this may seem limiting it is worth remembering that some traditional effects also exist in the audio signal chain. For example delay. The FX should be considered more like mini applications that not only affect the audio but also affect the behaviour of the step and sometimes the pattern itself.

This section and following parts will hopefully demystify their use, especially within pragmatic use case examples.

Affects Audio Sound.

- V Volume
- P Panning
- M Micro Tuning
- n Random Note
- i Random Instrument
- v Random Volume
- r Reverse Sample
- P Position in sample / wave
- g Volume LFO Rate
- h Panning LFO Rate
- j Filter LFO Rate
- k Position LFO Rate
- l Finetune LFO Rate
- D Overdrive amount
- L Low Pass Filter
- B Band Pass Filter
- H High Pass Filter
- s Delay Send
- t Reverb Send
- E Bit Depth
- U Tuning

Affects Step Behaviour.

- - None
- ! Off
- C Chance
- R Roll
- f Random FX
- S Slice Playback of Sample

Affects Structure / Timing

- T Tempo
- I Swing
- m Micro Timing
- G Glide
- q Gate Length
- A Arpeggiator
- a - f CC A-F / Macro 1-6
- F Slide Up
- J Slide Down
- 0 MIDI Chord

Affects MIDI / Synth

- a CC A / Macro 1
- b CC B / Macro 2
- c CC C / Macro 3
- d CC D / Macro 4
- e CC E / Macro 5
- f CC F / Macro 6
- 0 MIDI Chord

7.3 None

NOTES

FX Type Tag	Effect
-	None - No FX Applied

FX Description

No effect is applied and hence the sound for the step will purely be based on the instrument and note. This is basically an empty effect.

Value Ranges	Pad Range
N/A	N/A

Example

Default state for any step is that the FX1 and FX2 are empty. This effect can be applied to remove an existing FX and reset to the normal empty state.

		FX1	FX2
1	D6 03	----	----
5	D6 03	----	----
9	D6 03	----	----
13	D6 03	----	----
16	D6 03	----	----

The last two slots are for FX. They will be indicated with dashed lines when empty. This is the default empty state of a step.

Selected step will be bounded green or red in recording edit mode. The part of the step to be edited is solid filled when selected as per illustration where FX1, Step 1 is shown selected.

NOTES

7.4 Off

FX Type Tag	Effect
!	Off

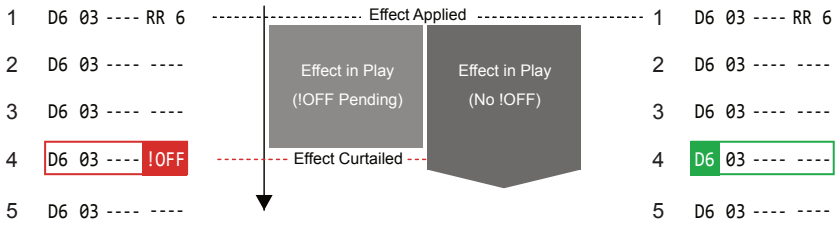
FX Description

Will deactivate an effect that has been triggered on a prior step.

Value Ranges	Pad Range
On	Any pad will apply the Off command

Example

A roll triggered on step 1 will be audible over the subsequent following steps. Applying an !OFF step command afterwards will curtail the effect for the track.



7.5 Volume

NOTES

FX Type Tag	Effect
V	Volume / Velocity

FX Description

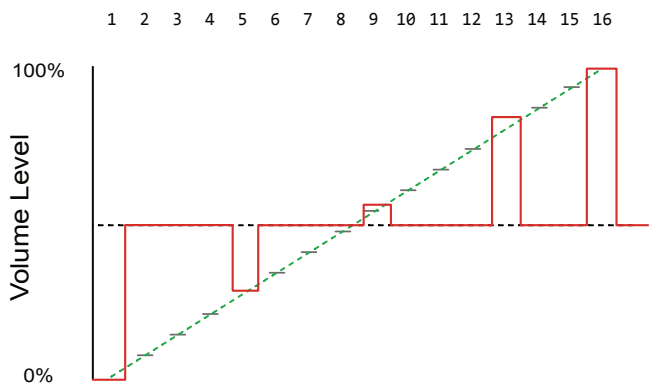
Will apply a volume level for this individual instrument step.
For MIDI this will send a NOTE ON Velocity parameter.

Value Ranges	Pad Range
0 - 100%	Pad 1 = 0%, Pad 13 = 25%, Pad 25 = 51%, Pad 37 = 76, Pad 48 = 100%

Example

To illustrate an example, 16 Steps with volume ramped up through the pattern steps. This will be a stepped ramp. To create a smoother ramp try using the fill function to populate all steps using 'From-To' or Live Rec. This will still be triggered per step but will be audibly smoother.

1	D6 03 ---- V 0	1	D6 03 ---- V 0
5	D6 03 ---- V 30	2	D6 03 ---- V 6
9	D6 03 ---- V 55	3	D6 03 ---- V 13
13	D6 03 ---- V 80	15	D6 03 ---- V 94
16	D6 03 ---- V100	16	D6 03 ---- V100



NOTES

7.6 Panning

FX Type Tag	Effect
P	Panning

FX Description

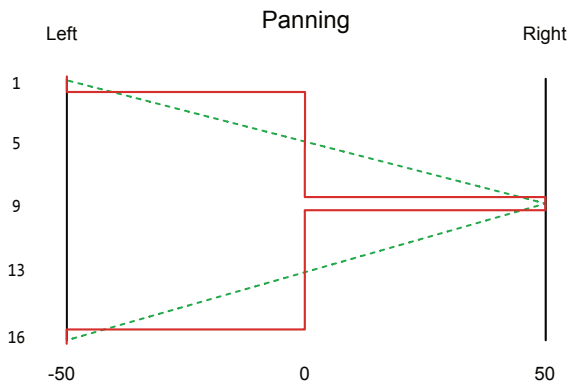
Positions the audio within the stereo field, panning the signal in the left / right position. This is applied per step.

Value Ranges	Pad Range
L -50 - R +50	Pad 1 = -50, Pad 13 = -25, Pad 25 = +1, Pad 37 = +26, Pad 48 = +50

Example

An example of 16 Steps panned left to right and then back to left. Triggered for the stereo position per step. To create a smoother, less stepped transition use fill to populate all steps using ‘From-To’.

1	D6 03 ---- P-50	1	D6 03 ---- P-50
5	D6 03 ---- P 0	2	D6 03 ---- P-42
9	D6 03 ---- P 50	3	D6 03 ---- P-31
13	D6 03 ---- P 0	15	D6 03 ---- P-38
16	D6 03 ---- P-50	16	D6 03 ---- P-50



7.7 Micro-Tune

NOTES

FX Type Tag	Effect
M	Micro Tuning

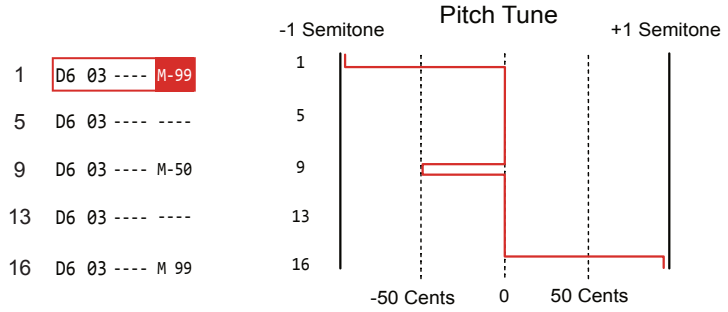
FX Description

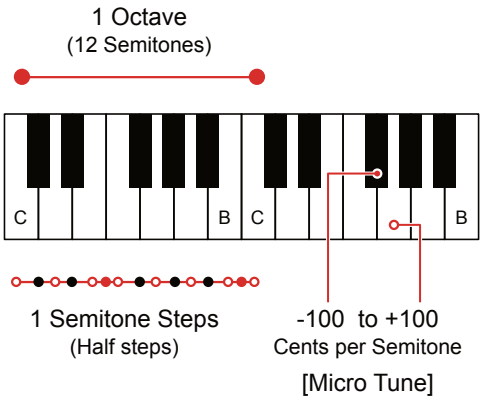
Applies a fine tuning pitch adjustment for the step note or MIDI output. Operates in cents, where 100 cents is one semitone

Value Ranges	Pad Range
-99 to +99 Cents	Pad 1 = -99, Pad 13 = -49, Pad 25 = +2, Pad 37 = +52, Pad 48 = +99

Example

A semitone is 100 cents but as the tuning is so fine, the maximum range of micro tuning is almost a full semitone. This can be used to add variation especially with percussive sounds while still maintaining musicality.





NOTES

7.8 Glide

FX Type Tag	Effect
G	Glide

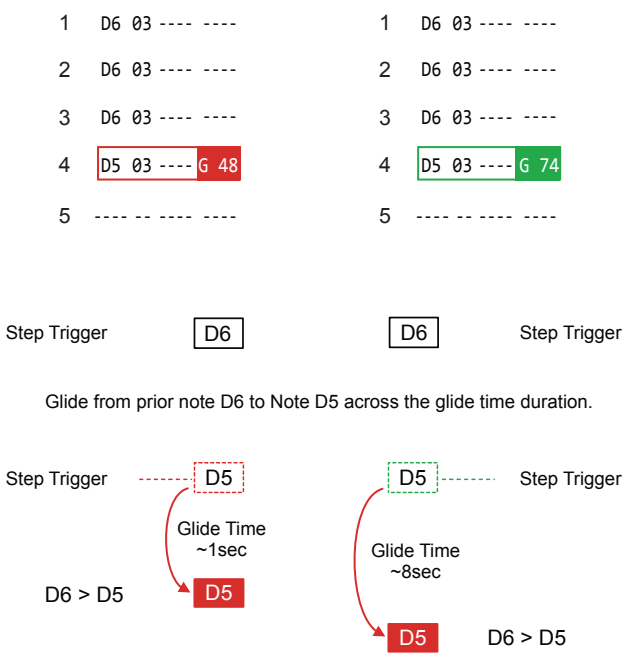
FX Description

Creates a smooth transition when the step is activated, from the pitch of a previous note value to the current step note value over a time period based on the glide time setting. Glide time is in percentage which represents time.

Value Ranges	Pad Range
0 - 100%	Pads 1 - 24 = 0 - 48% (0 to ~1 Sec), Pads 25 - 48 = 49 - 100% (~1s - 15 Secs)

Example

A short or long glide time transition can bring a creative effect using the pitch of a step note. Try experimenting by using glides in combination with other steps.



Glide Time Converter (Estimated)

%	0	13	25	36	50	55	60	65	70	75	80	85	90	95	100
Sec	0	0.25	0.5	0.75	1.0	2.4	3.8	5.2	6.6	8.0	9.4	10.8	12.2	13.6	15

7.9 Tempo

NOTES

FX Type Tag	Effect
T	Tempo Change

FX Description

Applies a % tempo change triggered on the step. TSTP Tempo Stop - Stops the sequencer running. Given that MIDI is synchronised to the project tempo, this will also affect MIDI Out clock.

Value Ranges	Pad Range
10 - 400%	Pad 1 = TSTP, Pad 13 = 108%, Pad 25 = 208%, Pad 48 = 400%. Jog is more precise in use.

Example

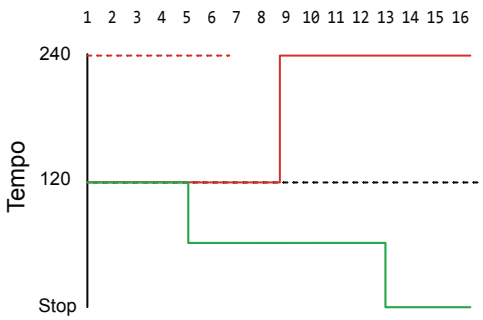
Tempo change is applied to the entire pattern from the step onwards. A TSTP command, applied with (Jog) left, will add a full stop step which will halt the sequencer. Default tempo of 120 for this example.

Example 1.

```
1   D6 03 ---- ----
5   D6 03 ---- ----
9   D6 03 ---- T200
13  D6 03 ---- ----
16  D6 03 ---- ----
```

Example 2.

```
1   D6 03 ---- ----
5   D6 03 ---- T 50
9   D6 03 ---- ----
13  D6 03 ---- TSTP
16  D6 03 ---- ----
```



Example 1.
Pattern will play first cycle and trigger the tempo change on step 9. The entire pattern tempo will change and continue through subsequent pattern cycles until a new tempo is triggered or set.

Example 2.
Pattern will play at the defined tempo, change when triggered then the pattern will stop when the TSTP event is activated.

NOTES

7.10 Swing

FX Type Tag	Effect
I	Swing

FX Description

Introduces a groove or shuffle into the pattern timing. 50% is no swing. Range is 25% to 75% of pattern swing. Also applied to MIDI Out.

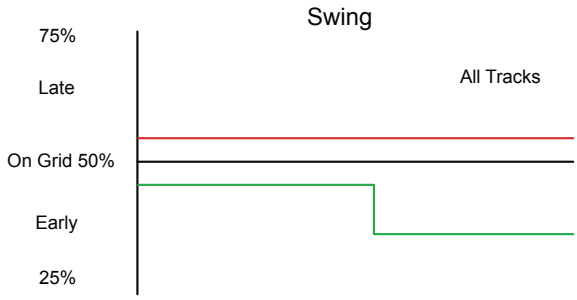
Value Ranges	Pad Range
25 - 75%	Pad 1 = 25%, Pad 13 = 37%, Pad 25 = 50%, Pad 37 = 63%, Pad 48 = 75%

Example

Swing on a step track will apply across the pattern. These can create a groove. Maybe experiment with variations. Adjust by ear rather than numbers.

```
1   D6 03 ---- I 55
5   D6 03 ---- P  0
9   D6 03 ---- P 50
13  D6 03 ---- P  0
16  D6 03 ---- P-50
```

```
1   D6 03 ---- I 45
5   D6 03 ---- ----
9   D6 03 ---- I 35
13  D6 03 ---- ----
16  D6 03 ---- ----
```



7.11 Micro Move

NOTES

FX Type Tag	Effect
m	Micro Move

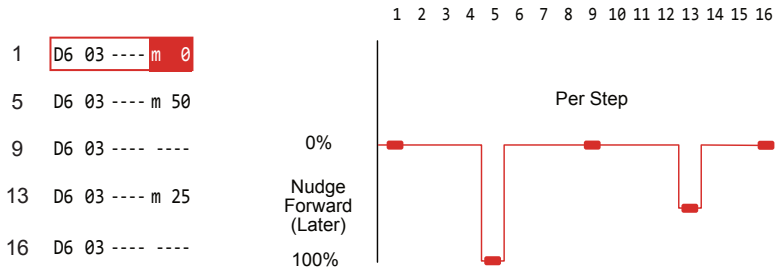
FX Description

Will apply a small offset to the note step. This will move the note forward by an amount based on the setting.

Value Ranges	Pad Range
0 - 100%	Pad 1 = 0%, Pad 13 = 25%, Pad 25 = 51%, Pad 37 = 76%, Pad 48 = 100%

Example

Can be used to offset one part of a track step or provide minor step variations. Think of this similar to swing, but applied to a step rather than pattern.



While the range is 0-100%, the actual shift of notes is only in small amounts. The 0% setting is 'On Grid' while any nudge is forward in the pattern.

NOTES

7.12 Gate Length

FX Type Tag	Effect
q	Gate Length

FX Description

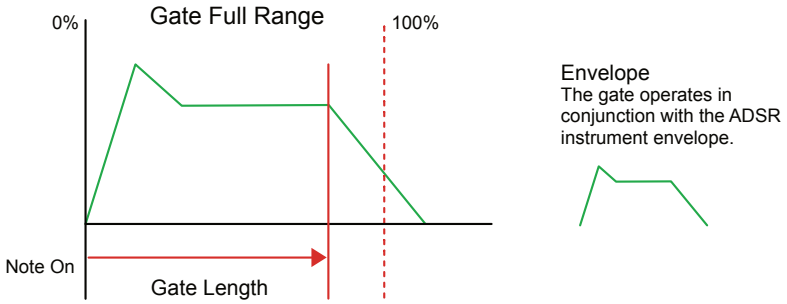
Adjusts the length of the note gate and helps shape the sound. Operates in conjunction with the instruments Envelope settings which are found in the 'Instrument's Parameters'.

Value Ranges	Pad Range
0 - 100%	Pad 1 = 0%, Pad 13 = 25%, Pad 25 = 51%, Pad 37 = 76, Pad 48 = 100%

Example

Increases or reduces the gate for the note. This works with the envelope and will determine length of note helping to shape the sound over time.

```
1   D6 03 ---- q 80
5   D6 03 ---- ----
9   D6 03 ---- ----
13  D6 03 ---- ----
16  D6 03 ---- ----
```



7.13 Chance

NOTES

FX Type Tag	Effect
C	Chance

FX Description

Sets the chance condition for the step. This will apply a probability of whether the step will play or not. Higher percentages means a higher chance of playing. 100% will always play, 0% will never play.

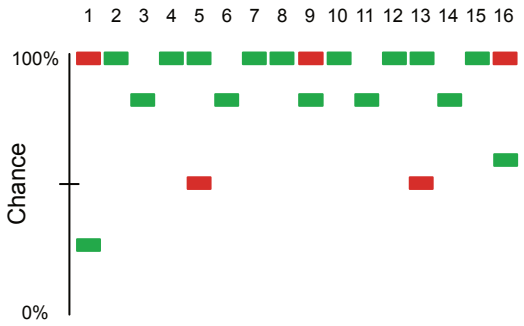
Value Ranges	Pad Range
0 - 100%	Pad 1 = 0%, Pad 13 = 25%, Pad 25 = 51%, Pad 37 = 76, Pad 48 = 100%

Example

Can add variation to a pattern. For example a percussive note sequence could have some steps with a chance setting to dictate whether it will sound or not. This can create interest and variety in melodies or beats.

```
1   D6 03 ---- V  0
5   D6 03 C 50 V 30
9   D6 03 ---- V 55
13  D6 03 C 50 V 80
16  D6 03 ---- V100
```

```
1   D6 03 ---- C 25
2   D6 03 ---- ----
3   D6 03 ---- C 85
15  D6 03 ---- ----
16  D6 03 ---- C 55
```



NOTES

7.14 Roll

FX Type Tag	Effect
R	Roll

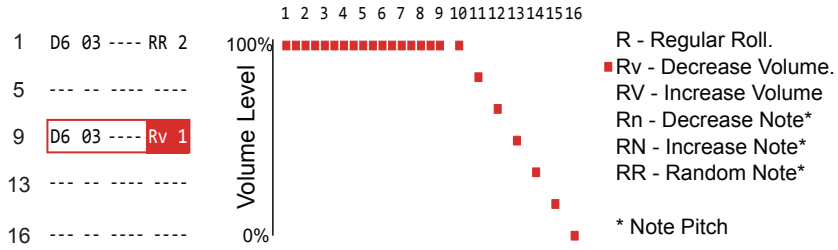
FX Description

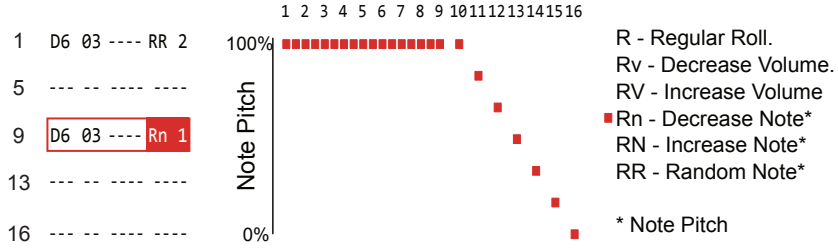
Repeat of the note applied using a step division. This can be straight repeats or evolving repeats depending on the roll type selected. The option for types are R, Rv, RV, Rn, RN, RR with a step divider range of 0 - 16.

Value Ranges	Pad Range
0 - 16 per Type	Pad 1 - 8 = R, Pads 9 - 16 = Rv, Pads 17 - 24 = RV, Pads 25 - 32 = Rn, Pads 33 - 40 = RN, Pads 41 - 48 = RR. Use Jog wheel for more precise and a wider selection.

Example

Rolls are extremely versatile and can be applied as volume or note pitch ramp up / down or just to randomise notes.





7.15 Arpeggiator

NOTES

FX Type Tag	Effect
A	**Arp**

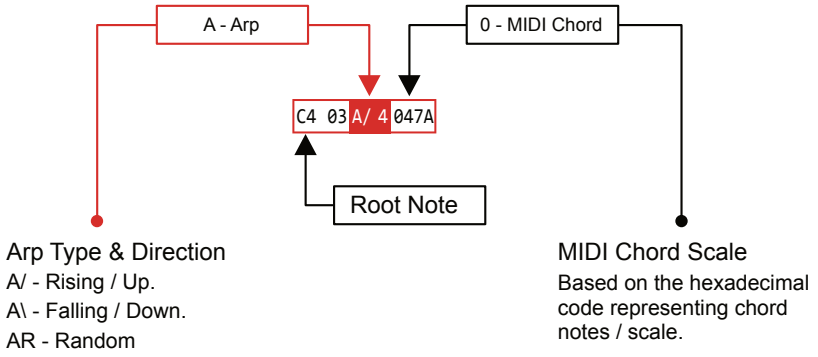
FX Description

Arpeggiator. This needs a note value and works in conjunction with the MIDI chord which must also be assigned to the other FX slot

Value Range	Pad Range
See Below	Jog wheel gives precise and wider range of settings. Pads are more difficult when applying arp settings.

Set the FX1 slot to the Arp type. This can operate with a note melody: Up / Rising '/' or Down / Falling '\' or Random 'R'. The value is based on the tempo divider as a number e.g. 6 or multiplier e.g. .6 (dot 6).

Set the FX2 slot to MIDI Chord. This is an effect used with MIDI but also provides scale details for the Arp.



Example Tracker+ Chords

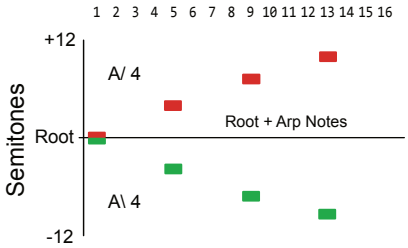
MIDI Chord Hex Code	Scale	A/ Rising Chord Example Root C	A\ Falling Chord Example Root C	AR Random Chord Example Root C
0 27	Sus2	C - D - G	G - D - C	Random order
0 57	Sus4	C - F - G	G - F - C	Random order
0 37	Min	C - D# - G	G - D# - C	Random order
0 47	Maj	C - E - G	G - E - C	Random order
0 5C	Open4	C - F - C	C - F - C	Random order
0 7C	Open5	C - G - C	C - G - C	Random order
0379	Min6	C - D# - G - A	A - G - D# - C	Random order
037A	Min7	C - D# - G - A#	A# - G - D# - C	Random order
0479	Maj6	C - E - G - A	A - G - E - C	Random order
047B	Maj7	C - E - G - B	B - G - E- C	Random order

NOTES

Example

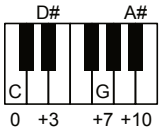
The Arp uses the Note as the root and the Arp effect sets the direction and timing. This needs a MIDI Chord also in the other FX slot to create the chord which will be arpeggiated. Setting the MIDI Chord to a value at ‘0’ will play notes through a chromatic scale and is useful when setting up the Arp to get the direction and timing right before applying a specific scale.

Arp direction plus intervals can range through the dividers of 1, 2, 3, 4, 6, 8 and also the .1, .2, .3, .4, .6, .8 where a dot value indicates a multiplier.



Hex code represents
+ Semitones from root

e.g. 0 37A Min7

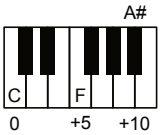


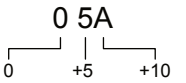
A/ would play C - D# - G Rising arpeggio
A\ would play G - D# - C Falling arpeggio
AR would play C - D# - G in Random order

Tracker+ gives a series of scales in the MIDI Chord description. While these are useful examples they do not fully cover all chords. Other chords are also available, represented by the hexadecimal number in the MIDI Chord FX. Translating a chord to the hexadecimal code for the MIDI Chord assignment will allow a wider range to be used. Alternatively, and a more practical approach is trial and error and listening by ear of what sounds ‘right’ when selecting scales.

Hex code represents
+ Semitones from root

e.g. 0 5A





Semitones from the root

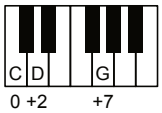
Hexadecimal to Decimal Converter

Hex	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Dec	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Other Examples

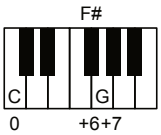
Hex code represents
+ Semitones from root

e.g. 0 27 Sus2



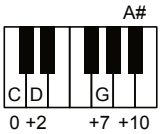
Hex code represents
+ Semitones from root

e.g. 0 67 sus



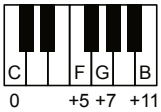
Hex code represents
+ Semitones from root

e.g. 027A



Hex code represents
+ Semitones from root

e.g. 057B



7.16 Random Note

NOTES

FX Type Tag	Effect
n	Random Note

FX Description

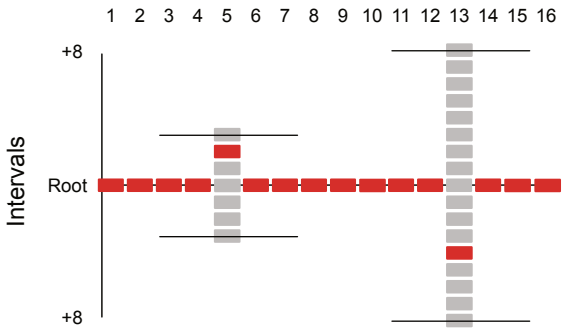
Sets a range of notes from which a random selection will be made, for each play cycle of the pattern. Interval are based on the selected scale for the pads

Value Ranges	Pad Range
0 to +/-100	Pad 1 = +/- 0, Pad 13 = +/- 25, Pad 25 = +/- 51, Pad 48 = +/-100

Example

The randomisation is applied within a range set by the value. By default this is a +/- semitone range across a chromatic scale. However this is based on the config settings and can therefore be changed to another scale. Start with a small range setting to keep things musical and then apply a different setting to experiment with variations.

```
1   D6 03 ---- ----
5   D6 03 ---- n  3     Range is -3 to +3 deviation from root
9   D6 03 ---- ----
13  D6 03 ---- n  8     Range is -8 to +8 deviation from root
16  D6 03 ---- ----
```



Notes 'n' will play randomly, through each pattern cycle. The selected range is set by the +/- value in the FX. This is applied with reference to the root note (Example D6) and determines the +/- offset from which the random note is selected.

NOTES

7.17 Random Instrument

FX Type Tag	Effect
i	Random Instrument

FX Description

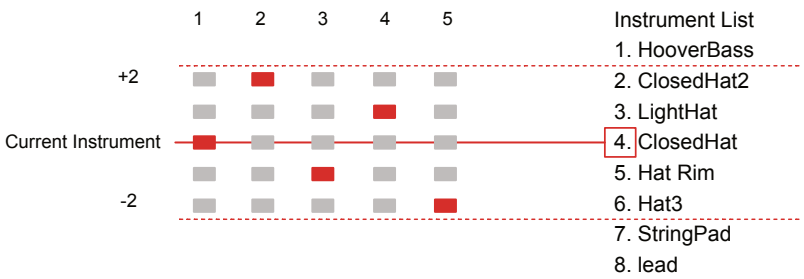
Sets a range of instruments from which a random selection will be made, for each play cycle of the pattern. Intervals are based on the selected instrument and the range before and after in the project instrument list.

Value Ranges	Pad Range
0 to +/-47	Pad 1 = 0, Pad 13 = 12, Pad 25 = 24, Pad 37 = 36, Pad 48 = 47

Example

Try loading a cluster of samples into the instrument list. This will form the range to select from. The step instrument being the central instrument for the randomisation range. For example a variation of percussive hats or vocal stabs. The random pick will select from these.

1	D6 04 ---- i 2	Range is -2 to +2 deviation from current instrument
2	D6 04 ---- i 2	Range is -2 to +2 deviation from current instrument
3	D6 04 ---- i 2	Range is -2 to +2 deviation from current instrument
4	D6 04 ---- i 2	Range is -2 to +2 deviation from current instrument
5	D6 04 ---- i 2	Range is -2 to +2 deviation from current instrument



Instrument 'i' will play randomly, through each pattern cycle. The selected range is set by the +/- value in the FX. This is applied with reference to the current instrument (Example 4) and determines the +/- offset from which the random note is selected. +2 is the Hat3 and -2 is ClosedHat2. LightHat and Hat Rim are included in this range.

7.18 Random FX

NOTES

FX Type Tag	Effect
f	Random FX Value

FX Description

Selects a random FX value (not type) for the FX located in the other slot, same step. Plays a random selection each pattern cycle based on the set range.

Value Ranges	Pad Range
0 to +/-255	Jog wheel gives precise and wider range of settings. Pads are inconsistent for this selection.

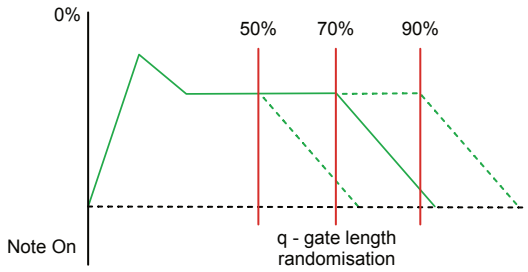
Example

This feature can add a variation to a pattern. For example FX1 Random 20 applies to FX2 Gate length, which will be the value randomised. Gate length full range is 0-100%. FX2 Functions other than Gate Length can also be used.

```
1   D6 03 ---- V  0
5   D6 03 f 20 q 70
9   D6 03 ---- V 55
13  D6 03 C 50 V 80
16  D6 03 ---- V100
```

FX1 Randomises the value for FX2 (q - gate Length)

f 20 ▶ q 70



Gate Length
Gate length value is randomised by +/-20 applied by FX1 to the default of 70 in FX2. Therefore gate length value variation will be a value selected between 50 - 90 over each pattern cycle.

NOTES

7.19 Random Volume

FX Type Tag	Effect
v	Random Volume

FX Description

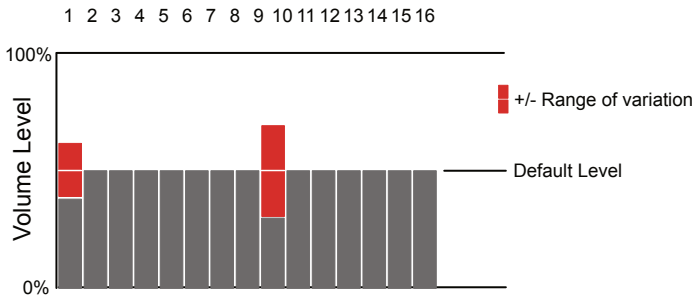
Creates a volume variation in each cycle of the pattern through randomisation of velocity. This is a value which is randomly selected from within a +/- range from the default volume level.

Value Ranges	Pad Range
0 to +/-100	Pad 1 = 0, Pad 13 = 25, Pad 25 = 51, Pad 37 = 76, Pad 48 = 100

Example

This is useful for creating accents and audible variations in volume level.

1	D6 03 ---- v 10	Range is -10 to +10 deviation from current default
5	--- -- ---- ----	
9	D6 03 ---- v 20	Range is -20 to +20 deviation from current default
13	--- -- ---- ----	
16	--- -- ---- ----	



Playback will be at the default volume until a random volume step is triggered. A value somewhere in the range will then be applied.

7.20 Reverse Sample

NOTES

FX Type Tag	Effect
r	Reverses Sample Playback

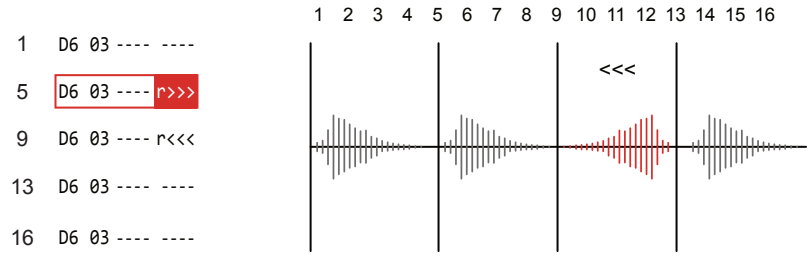
FX Description

Reverses the sample playback. Simply plays the sample forwards as normal or reverses its playback.

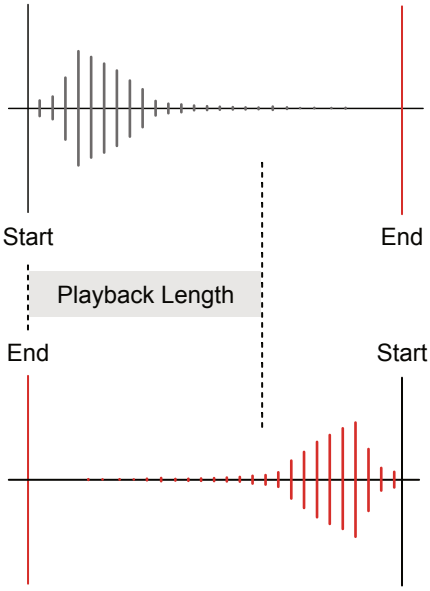
Value Ranges	Pad Range
<<< Or >>>	Pads 1 - 24 >>> Play Forward, Pads 25 - 48 <<< Reverse

Example

Reversing the sample playback is a simple application. The reverse will take place only on the step activated. It is also important in practical applications to know the sample length. If the 'tail' of a sample is long then reversing it may mean no sound is heard. Adjusting the 'end' parameter of the sample playback may also need to be changed.



Normal Sample Direction.
Playback from 'Start' to 'End' parameters as set in the sample playback settings.



Reversed Sample Direction.
Playback from 'End' to 'Start' parameters as set in the sample playback settings. End may need to be adjusted to hear audio within the step duration.

NOTES

7.21 Position

FX Type Tag	Effect
p	Position

FX Description

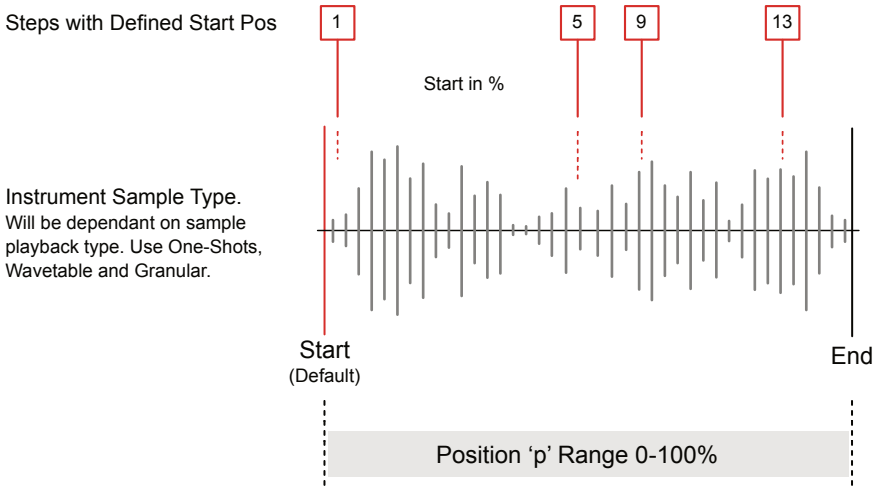
Sample start position for playback is set. This is based on the playback type selected and better applied with one-shot samples, wavetables and granular. When using sliced samples the ‘slice’ FX is an alternative option.

Value Ranges	Pad Range
0 - 100%	Pad 1 = 0, Pad 13 = 12, Pad 25 = 24, Pad 37 = 36, Pad 48 = 47

Example

Try experimenting with different samples and start points. Use full samples (one-shots), wavetables and granular types for the full more pronounced effect. Happy accidents to find a ‘sweet spot’ in a sample are possible. Automate the variation using individual steps to create movement and interest.

1	F5 22 ---- p 5	Start position for sample used in instrument 22 only for this step
5	F5 22 ---- p 47	Start position for sample used in instrument 22 only for this step
9	F5 22 ---- p 65	Start position for sample used in instrument 22 only for this step
13	F5 22 ---- p 85	Start position for sample used in instrument 22 only for this step
16	F5 22 ---- ----	Position for steps in-between ‘p’ will operate at the normal start



7.22 Slice

NOTES

FX Type Tag	Effect
S	Slice Playback

FX Description

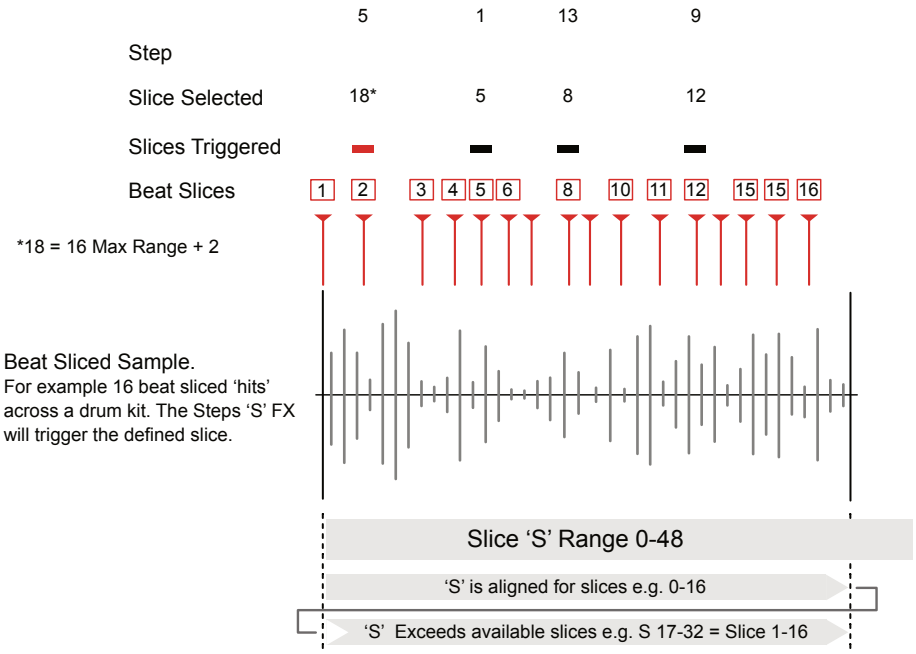
Plays a selected slice on the triggered step. While the FX range of steps is 1-48 it is typical to apply slices smaller groups e.g. 16 Steps. If so the selected step will wrap in the range.

Value Ranges	Pad Range
0 - 48	Pad 1 = 1, Pad 13 = 13 etc. However Pads will be based on available samples and the selection will wrap the range.

Example

The LFO is triggered by each step either using the rate from the step LFO pan or the default instrument parameter speed of no LFO FX is set. The LFO cycle is reset each trigger..

1	F5 16 ---- S 5	Slice 5 from beat sliced instrument 16 only for this step
5	F5 16 ---- S 18	Slice 2 (Wrapped 16+2) from beat sliced instrument 16.
9	F5 16 ---- S 12	Slice 12 from beat sliced instrument 16 only for this step
13	F5 16 ---- S 8	Slice 8 from beat sliced instrument 16 only for this step
16	F5 16 ---- ----	The last slice eg 16 is default if a slice selection is not defined.



NOTES

7.23 Volume LFO

FX Type Tag	Effect
g	Volume LFO Rate

FX Description

Selects the rate for the instrument volume LFO. This setting is in increments with respect to project tempo. LFO is found in the instrument parameters P2/2.

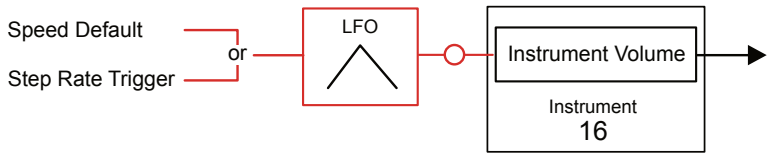
Value Ranges	Pad Range
Various	Pad 1 = 128, Pad 13 = 16, Pad 30 = 1, Pad 34 = 1/2, Pad 46 = 1/8. Advise using Jog.

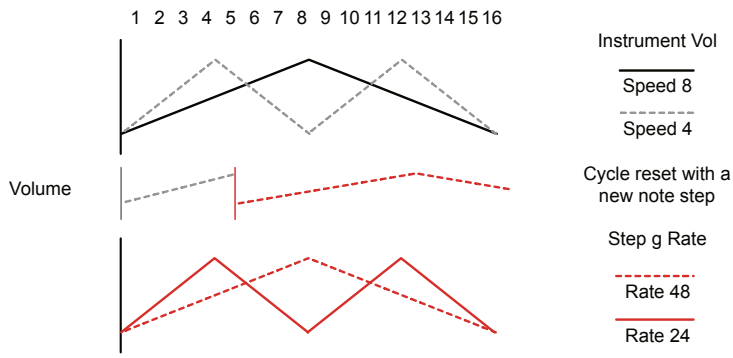
Example

The LFO is triggered by each step either using the rate from the step volume LFO or the default instrument parameter speed if no LFO FX is set. The LFO cycle is reset each trigger.

g Rates	128	96	64	48	32	24	16	12	8	6	4	3
	2	3/2	1	3/4	1/2	3/8	1/3	1/4	316 (3/16)	1/6	1/8	/12 (1/12)

1	F5 16 ---- ----	Speed set in the Instrument Parameter Volume LFO will apply
5	F5 16 ---- g 48	Step will trigger the LFO Rate change
9	--- -- ---- ----	Previous Step LFO Rate continues
13	--- -- ---- ----	





7.24 Panning LFO

NOTES

FX Type Tag	Effect
h	Panning LFO Rate

FX Description

Selects the rate for the instrument panning LFO. This setting is in increments with respect to project tempo. LFO is found in the instrument parameters P2/2.

Value Ranges	Pad Range
Various	Pad 1 = 128, Pad 13 = 16, Pad 30 = 1, Pad 34 = 1/2, Pad 46 = 1/8. Advise using Jog.

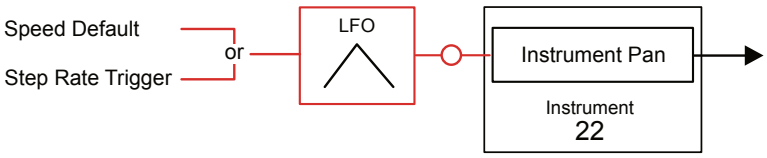
Example

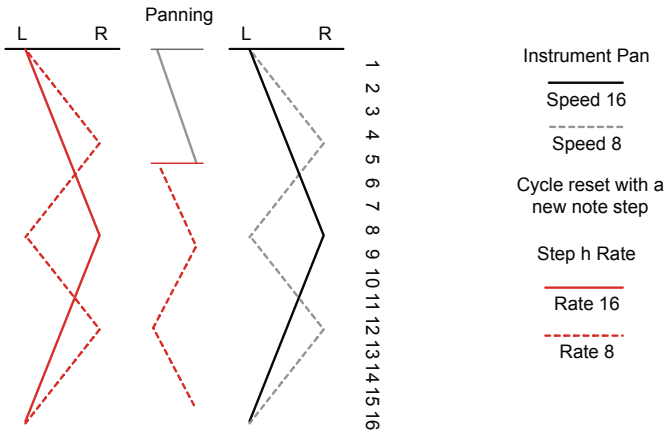
The LFO is triggered by each step either using the rate from the step pan LFO or the default instrument parameter speed if no LFO FX is set. The LFO cycle is reset each trigger.

h Rates

128	96	64	48	32	24	16	12	8	6	4	3	2	3/2	1
3/4	1/2	3/8	1/3	1/4	316 (3/16)	1/6	1/8	/12 (1/12)	/16 (1/16)	/24 (1/24)	/32 (1/32)	/48 (1/48)	/64 (1/64)	

1	F5 22 ---- ----	Speed set in the Instrument Parameter Panning LFO will apply
5	F5 22 ---- h 16	Step will trigger the LFO Rate change
9	--- -- ---- ----	Previous Step LFO Rate continues
13	--- -- ---- ----	





NOTES

7.25 Filter LFO

FX Type Tag	Effect
j	Filter Cutoff LFO Rate

FX Description

Selects the rate for the instrument filter cutoff LFO. This setting in increments with respect to project tempo. LFO is found in the instrument parameters P2/2. A filter type will need to be set which will effect the behaviour of the LFO.

Value Ranges	Pad Range
Various	Pad 1 = 128, Pad 13 = 16, Pad 30 = 1, Pad 34 = 1/2, Pad 46 = 1/8

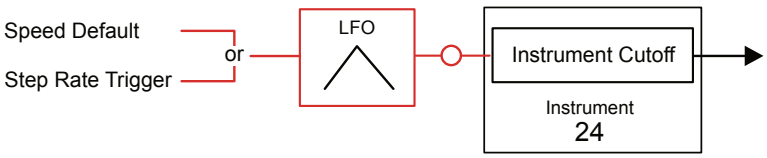
Example

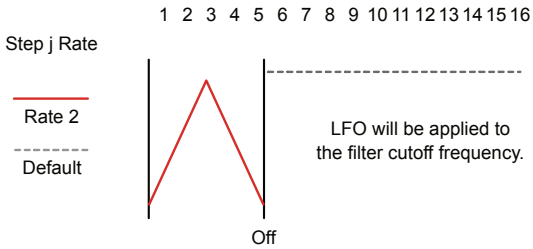
The LFO is triggered by each step either using the rate for the filter step LFO or the default instrument parameter speed of no LFO FX is set. The LFO cycle is reset each trigger. Higher rates 128-32 good for sweeps and mid range 4-1/3 good for dubstep style wobble.

j Rates

128	96	64	48	32	24	16	12	8	6	4	3	2	3/2	1
3/4	1/2	3/8	1/3	1/4	316 (3/16)	1/6	1/8	/12 (1/12)	/16 (1/16)	/24 (1/24)	/32 (1/32)	/48 (1/48)	/64 (1/64)	

1	F5 24 ---- j 2	Speed set in the Instrument Parameter LFO will apply
5	F5 24 ---- !OFF	OFF may be used to avoid filter state cutting out all audio
9	F5 24 ---- ----	Plays at default filter setting
13	--- -- ---- ----	





The impact of the LFO will depend on the type of filter selected and the settings in the filter LFO and settings in the instrument parameters.

7.26 Position LFO

NOTES

FX Type Tag	Effect
k	Position LFO Rate

FX Description

Selects the rate for the instrument wavetable / granular sample position LFO. This setting is in increments with respect to project tempo. LFO is found in the instrument parameters P2/2.

Value Ranges	Pad Range
Various	Pad 1 = 128, Pad 13 = 16, Pad 30 = 1, Pad 34 = 1/2, Pad 46 = 1/8. Advise using Jog.

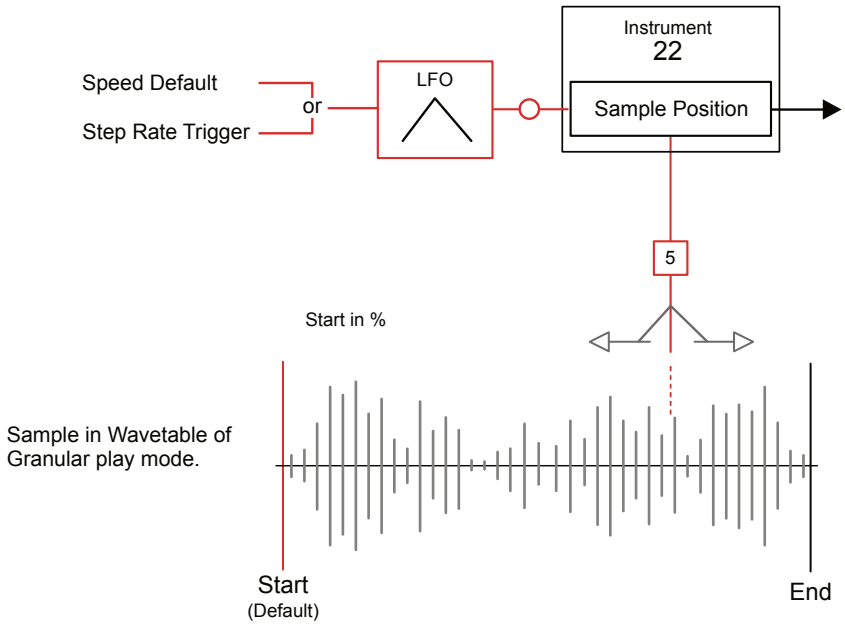
Example

The LFO will adjust the position in the wavetable or granular sample. One of these play modes must be set to apply a position modulation from the LFO. The step then can vary the speed of the LFO per step.

h Rates

128	96	64	48	32	24	16	12	8	6	4	3	2	3/2	1
3/4	1/2	3/8	1/3	1/4	316 (3/16)	1/6	1/8	/12 (1/12)	/16 (1/16)	/24 (1/24)	/32 (1/32)	/48 (1/48)	/64 (1/64)	

1	F5 22 ---- ----	Speed set in the Instrument Parameter Panning LFO will apply
5	F5 22 ---- k 12	Step will trigger the LFO Rate change
9	--- -- ---- ----	Previous Step LFO Rate continues
13	--- -- ---- ----	



NOTES

7.27 Finetune LFO

FX Type Tag	Effect
1	Finetune LFO Rate

FX Description

Selects the rate for the instrument finetuning LFO. This setting in increments with respect to project tempo. LFO is found in the instrument parameters P2/2.

Value Ranges	Pad Range
Various	Pad 1 = 128, Pad 13 = 16, Pad 30 = 1, Pad 34 = 1/2, Pad 46 = 1/8

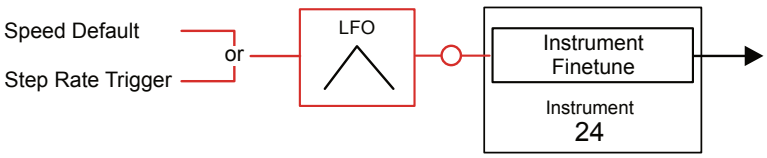
Example

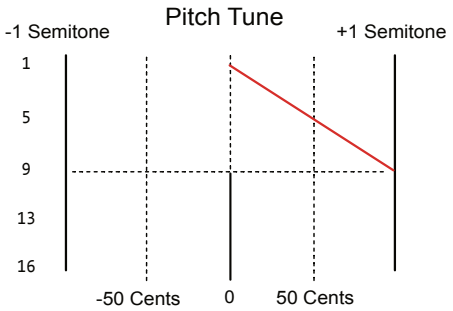
The LFO is triggered by each step applied. Slower rates are good to introduce an evolving slight pitch variation.

1 Rates

128	96	64	48	32	24	16	12	8	6	4	3	2	3/2	1
3/4	1/2	3/8	1/3	1/4	316 (3/16)	1/6	1/8	/12 (1/12)	/16 (1/16)	/24 (1/24)	/32 (1/32)	/48 (1/48)	/64 (1/64)	

1	F5 24 ---- 1 48	Speed of LFO for the step.
5	--- -- ---- ----	
9	F5 24 ---- ----	Triggers note at correct pitch
13	--- -- ---- ----	





7.28 Overdrive

NOTES

FX Type Tag	Effect
D	Overdrive amount

FX Description

Selects the amount of overdrive applied for the duration of the specific step. Overdrive is found in the instrument parameters P1/2 - Effects.

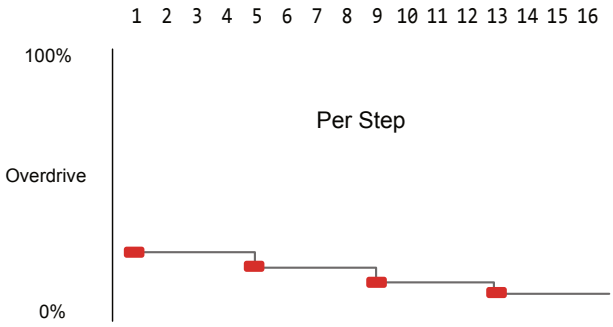
Value Ranges	Pad Range
0-100%	Pad 1 = 0%, Pad 13 = 25, Pad 25 = 51, Pad 37 = 76, Pad 48 = 100%.

Example

Can be used simply to add overdrive for the specific instrument and create variety across a pattern.

```
1   F5 16 ---- D 20
5   F5 16 ---- D 17
9   F5 16 ---- D 10
13  F5 16 ---- D  5
16  F5 16 ----  ----
```

Variation of overdrive instrument effect



Take care when working with overdrive, especially with headphones. This can become loud. Start with smaller settings and expand as required.

NOTES

7.29 Low Pass Cutoff

FX Type Tag	Effect
L	Low Pass Filter

FX Description

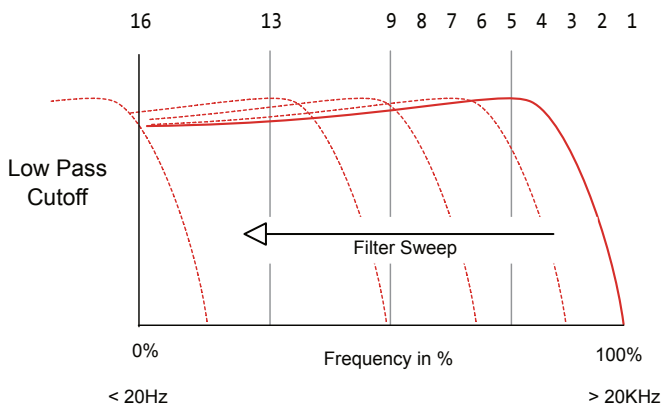
Adjust the instrument cutoff frequency of the low pass filter. The instrument filter is found in the instrument parameters P2/2 but can be disabled and this effect will still operate.

Value Ranges	Pad Range
0-100%	Pad 1 = 0%, Pad 13 = 25, Pad 25 = 51, Pad 37 = 76, Pad 48 = 100%.

Example

The cutoff frequency can be triggered by each step applied. This allows sweeps using only FX steps with multiple steps ramping the value or glitchy sequenced filter effects. 100% plays the sound as normal, all frequencies present, while 0% will totally cutoff all frequencies.

1	F5 16 ---- ----	Note and Instrument triggered with no filtering
5	--- -- ---- L 80	
9	--- -- ---- L 60	
13	--- -- ---- L 40	
16	--- -- ---- L 0	Sample triggered at step 1 will be fully filtered



7.30 Band Pass Cutoff

NOTES

FX Type Tag	Effect
B	Band Pass Filter

FX Description

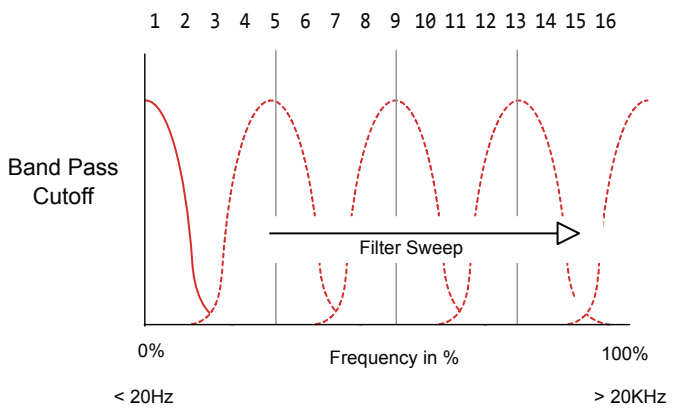
Adjust the instrument cutoff frequency of the band pass filter. The instrument filter is found in the instrument parameters P2/2 but can be disabled and this effect will still operate.

Value Ranges	Pad Range
0-100%	Pad 1 = 0%, Pad 13 = 25, Pad 25 = 51, Pad 37 = 76, Pad 48 = 100%.

Example

The cutoff frequency can be triggered by each step applied. This allows sweeps using only FX steps with multiple steps ramping the value or glitchy sequenced filter effects.

1	F5 16 ---- B 0	Note and Instrument triggered
5	--- -- ---- B 25	
9	--- -- ---- B 50	
13	--- -- ---- B 75	Band sweeps through the frequencies
16	--- -- ---- B100	



NOTES

7.31 High Pass Cutoff

FX Type Tag	Effect
H	High Pass Filter

FX Description

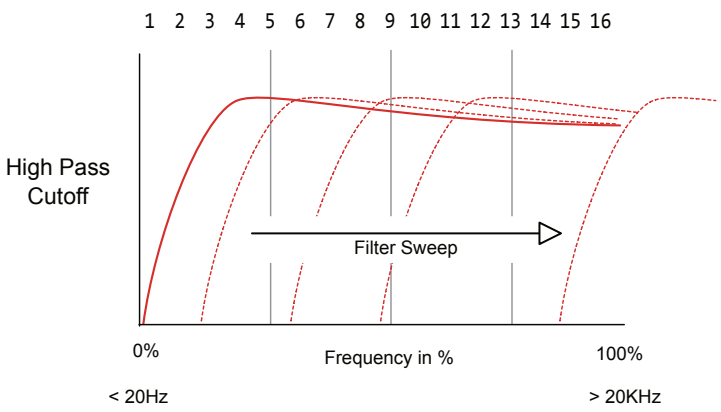
Adjust the instrument cutoff frequency of the high pass filter. The instrument filter is found in the instrument parameters P2/2 but can be disabled and this effect will still operate.

Value Ranges	Pad Range
0-100%	Pad 1 = 0%, Pad 13 = 25, Pad 25 = 51, Pad 37 = 76, Pad 48 = 100%.

Example

The cutoff frequency can be triggered by each step applied. This allows sweeps using only FX steps with multiple steps ramping the value or glitchy sequenced filter effects. 0% plays the sound as normal, all frequencies present, while 100% will almost cutoff all frequencies.

1	F5 16 ---- ----	Note and Instrument triggered with no filtering
5	--- -- ---- H 25	
9	--- -- ---- H 50	
13	--- -- ---- H 75	
16	--- -- ---- H100	Sample triggered at step 1 will be fully filtered



7.32 Delay

NOTES

FX Type Tag	Effect
s	Delay Effect Send

FX Description

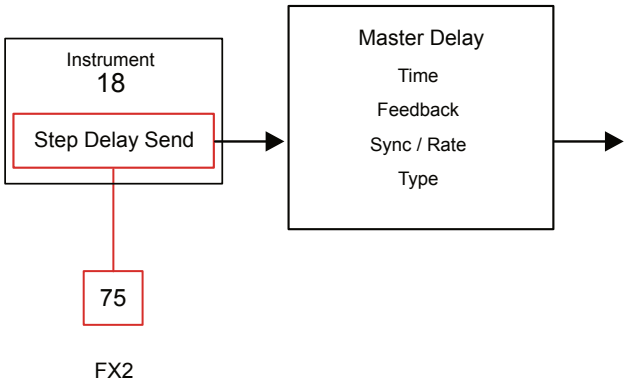
Sets the amount of the audio signal to send to the delay effect. The delay effect settings are found in the Master section. Type of delay, feedback etc are adjusted generically, for the project in master settings.

Value Ranges	Pad Range
0-100%	Pad 1 = 0%, Pad 13 = 25, Pad 25 = 51, Pad 37 = 76, Pad 48 = 100%.

Example

The effect is applied on the step triggered and the delay will be heard and extended through the pattern. The sound will depend on the master effect settings too. This step effect only controls the audio amount sent to the delay.

1	F5 18 ---- B 0	
5	F5 18 ---- s 75	Delay send amount initiated with the note
9	--- -- ---- ----	
13	F5 18 ---- ----	
16	--- -- ---- ----	Delay will have an audio tail beyond its step



NOTES

7.33 Reverb

FX Type Tag	Effect
t	Reverb Effect Send

FX Description

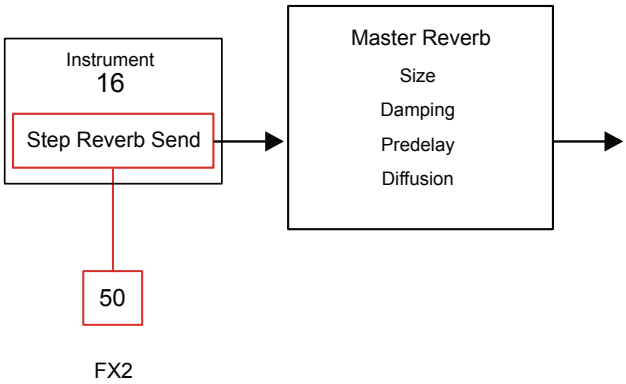
Sets the amount of the audio signal to send to the reverb effect. The reverb effect settings are found in the Master section. Reverb size, damping, pre-delay etc are adjusted generically, for the project in the master settings.

Value Ranges	Pad Range
0-100%	Pad 1 = 0%, Pad 13 = 25, Pad 25 = 51, Pad 37 = 76, Pad 48 = 100%.

Example

The effect is applied on the step triggered and the reverb will be heard and extended through the pattern. The sound will depend on the master effect settings too. This step effect only controls the audio amount sent to the reverb.

1	F5 16 ---- ----	
5	F5 16 ---- t 50	Reverb send amount initiated with the note
9	--- -- ---- ----	
13	F5 16 ---- ----	
16	--- -- ---- ----	Reverb will have an audio tail beyond its step



7.34 Bit Depth

NOTES

FX Type Tag	Effect
E	Bit Depth

FX Description

Sets the bit depth for the step. This can range from 4 Bits to 16 Bits Normal maximum setting). Lower rates create a more LoFi grainy sound texture.

Value Ranges	Pad Range
4-16 Bits	Pad 1 = 4 Bits, Pad 13 = 7, Pad 25 = 10, Pad 48 = 16 Bits

Example

The effect is applied on the step triggered and will apply a LoFi sound. This is great to create chip tune and classic video game like sounds and LoFi and glitchy emulations.

1	F5 18 ---- E 4	Set to 4 Bit reduction to create a noisy texture.
5	F5 18 ---- ----	
9	--- -- ---- ----	
13	F5 18 ---- E 12	
16	--- -- ---- ----	

NOTES

7.35 Tune

FX Type Tag	Effect
U	Tuning Adjustments

FX Description

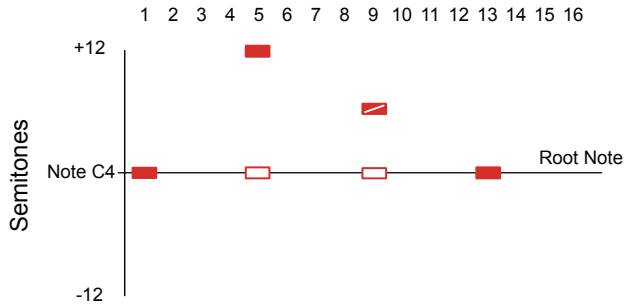
Adjusts the step tuning across a 4 Octave range. Introduce a variation from the step note between -24 Semitones to +24 Semitones.

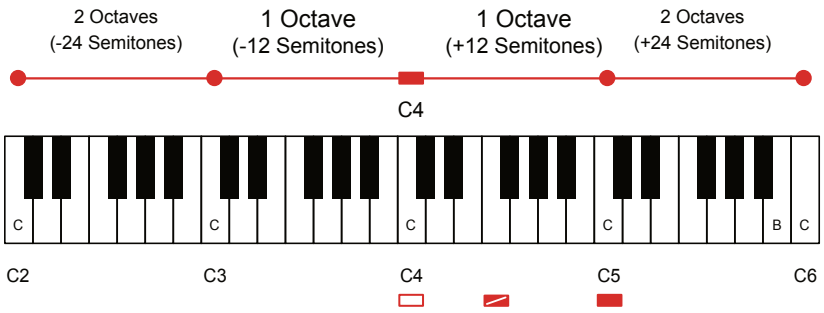
Value Ranges	Pad Range
-24 to +24 Semitones	Pad 1 = -24 Semitones, Pad 13 = -12 Semitones, Pad 25 = 0, Pad 36 = 12, Pad 48 = +24 Semitones.

Example

The tuning parameter transposes the current step from it's actual 'note' setting.

1	C4 09 ---- ----	Note C4 played with no transposition
5	C4 09 ---- U 12	Note C4 Transposed up 12 Semitones
9	C4 09 ---- U 5	Note C4 Transposed up 5 Semitones
13	C4 09 ---- U 0	Note C4 played with no transposition
16	--- -- ---- ----	





7.36 Slide Up

NOTES

FX Type Tag	Effect
F	Slide Up - Pitch

FX Description

Creates a pitch slide up from the current note as the starting reference. The intervals are in 1/16th Semitone mapped across the 0-255 range.

Value Ranges	Pad Range
0-255	Pad 1 = 0, Pad 4 = 16, Pad 7 = 32, Pad 25 = 130, Pad 36 = 189, Pad 48 = 255. Use Jog for more precise changes.

Example

While the glide effect operates on a time based pitch change and is referenced from the previous step, the slide function operates using semitone increments to control pitch from the current step note value. Values in denominations of 16 represent semitones.

1	C5 18 ---- ----	Triggers a C5 Note
5	C6 18 ---- F 16	Triggers a C6 Note which slides up 1 Semitone i.e. 16/16
9	--- -- ---- ----	
13	C6 18 ---- F 32	Triggers a C6 Note which slides up 2 Semitones i.e. 32/16
16	--- -- ---- ----	

Slides the pitch from the current note up in 1/16th of a semitone iterations. A value of 16 will slide 1 Semitone.

Slide Range Converter (Estimated)

Value	0	16	32	64	80	112	128	192	224	255
Semitones	0	1	2	4	5	7	8	12	14	16

NOTES

7.37 Slide Down

FX Type Tag	Effect
J	Slide Down - Pitch

FX Description

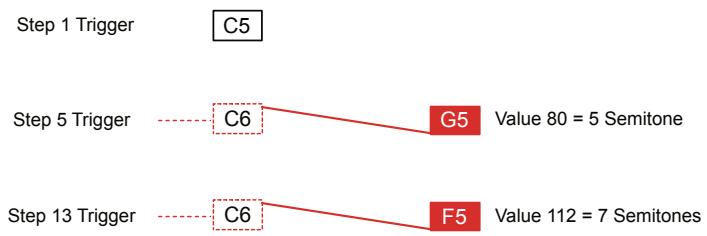
Creates a pitch slide down from the current note as the starting reference. The intervals are in 1/16th Semitone mapped across the 0-255 range.

Value Ranges	Pad Range
0-255	Pad 1 = 0, Pad 4 = 16, Pad 7 = 32, Pad 25 = 130, Pad 36 = 189, Pad 48 = 255. Use Jog for more precise changes.

Example

While the glide effect operates on a time based pitch change and is referenced from the previous step, the slide function operates using semitone increments to control pitch from the current step note value. Values in denominations of 16 represent semitones.

1	C5 18 ---- ----	Triggers a C5 Note
5	C6 18 ---- J 80	Triggers a C6 Note which slides down 5 Semitones i.e. 80/16
9	--- -- ---- ----	
13	C6 18 ---- F112	Triggers a C6 Note which slides down 7 Semitones i.e. 112/16
16	--- -- ---- ----	



Slides the pitch from the current note up in 1/16th of a semitone iterations. A value of 16 will slide 1 Semitone.

Slide Range Converter (Estimated)

Value	0	16	32	64	80	112	128	192	224	255
Semitones	0	1	2	4	5	7	8	12	14	16

7.38 MIDI Messages or Synth Macros

NOTES

FX Type Tag	Effect
a - f	MIDI CC A-F Messages or Synth Macros

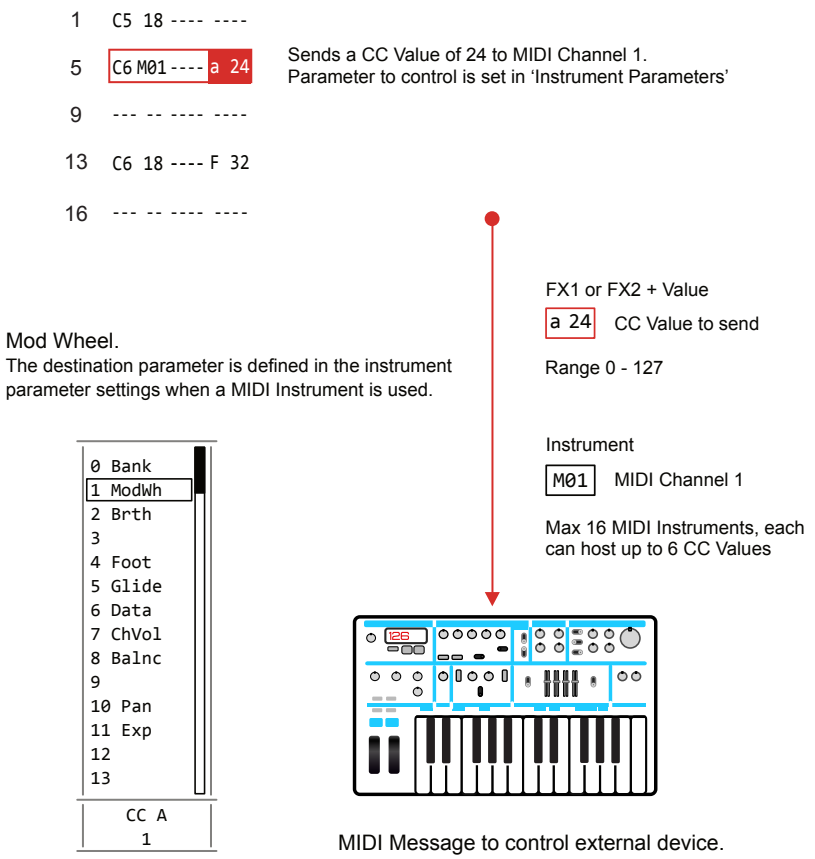
FX Description

For MIDI this issues a message out. This is typically CC but is selectable in the Instrument Parameters. Requires a MIDI instrument set with the channel. If a synth is the instrument, this will set its selected macro 1-6 parameter value.

Value Ranges	Pad Range
0-127	Pad 1 = 0, Pad 13 = 32, Pad 25 = 64, Pad 48 = 127. Use Jog for more precise changes.

Example

While the glide effect operates on a time based pitch change and is referenced from the previous step, the slide function operates using semitone increments to control pitch from the current step note value. Values in denominations of 16 represent semitones.



NOTES

7.39 MIDI Chords

FX Type Tag	Effect
0	MIDI Chords Out

FX Description

Sends MIDI Chords out which are a combination of notes based on the numerical (Hex) value of the step FX. MID Chord is also used in conjunction with Arp step FX.

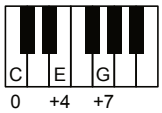
Value Ranges	Pad Range
Various	Pad 1 = 0, Pad 4 = 16, Pad 7 = 32, Pad 25 = 130, Pad 36 = 189, Pad 48 = 255. Use Jog for more precise changes.

Example

The chord is derived from the hexadecimal value applied in the MIDI Chord step and selected from a defined library of chords. The first '0' represents the MIDI Chord effect other digits the chord notes, offset from the root note.

1	C5 18 ---- 0 47	Triggers a Major Chord: C5 + 4 Semitones + 7 Semitones.
5	C6 18 ---- ----	Triggers a C6 Note.
9	--- -- ---- ----	
13	C6 18 ---- F112	
16	--- -- ---- ----	

Hex code represents
+ Semitones from root
e.g. 0 47 Maj



Hexadecimal to Decimal Converter

Hex	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Dec	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Tracker+ Chords (Root C Examples)

MIDI Chord Hex Code	Scale	Chord Example from Root C
0 27	Sus2	C - D - G
0 28	Sus2 #5	C - D - G#
0 36	DimTriad	C - D# - F#
0 37	Min	C - D# - G
0 47	Maj	C - E - G
0 48	AugTriad	C - E - G#
0 57	Sus4	C - F - G
0 5A	Stack4	C - F - A#
0 5C	Open4	C - F - C
0 67	Sus #4	C - F# - G
0 7C	Open5	C - G - C
0 7E	Stack5	C - G - D
0279	Sus2Add6	C - D - G - A
027A	Sus2 b7	C - D - G - A#
027B	Sus2Maj7	C - E - G - B

MIDI Chord Hex Code	Scale	Chord Example from Root C
0368	Dim7	C - D# - F# - G#
036A	Half Dim	C - D# - F# - A#
0378	Min b6	C - D# - G - G#
0379	Min6	C - D# - G - A
037A	Min7	C - D# - G - A#
037B	MinMaj7	C - D# - G - B
0479	Maj6	C - E - G - A
047A	Dom7	C - E - G - A#
047B	Maj7	C - E - G - B
0489	Aug Add6	C - E - G# - A
048A	Aug b7	C - E - G# - A#
048B	Aug Maj7	C - E - G# - B
057A	Sus b7	C - F - G - A#
057B	Su4Maj7	C - F - G - B

8

Audio

Audio is the central element in Tracker+ and at the heart of almost everything. The end to end process of Sampling - Editing - Performing carries many sub topics that involve audio. Patterns are made with instruments and notes that trigger sounds. The process starts with the procuring, capturing or recording of audio. Multiple audio sources are available from which to sample. It is possible to connect external line level gear, a microphone and even record from the internal radio. In addition the ability to render internal audio is also a useful feature. Tracker+ works with PCM WAV files and includes stereo sampling. Anti-aliasing option is available in the 'Config' menu. Many options exist to render and export either parts of patterns, full songs or track stems. Be aware rendering may take some time as it sequentially renders to audio almost real time. A toolkit of destructive editing features helps to prepare audio for use in instruments and patterns and for further integration with other features such as the play modes and routing through effects. Each Projects can hold up to 750 seconds of mono audio samples and 350 seconds of stereo although the available memory can be increased by using lower quality audio. Of course Tracker+ already is supplied out of the box with a number of samples and instruments pre-loaded to the supplied microSD card. These are great to get things started and additional samples can be added and imported. It is important to state that adherence to copyright laws and original material ownership should be respected when recording and sampling audio. Take care to operate within any relevant laws especially if considering to commercially release a track. So this section will cover the recording and editing of audio samples within the sample recorder and sample editor pages as well as the general render and export file page options.

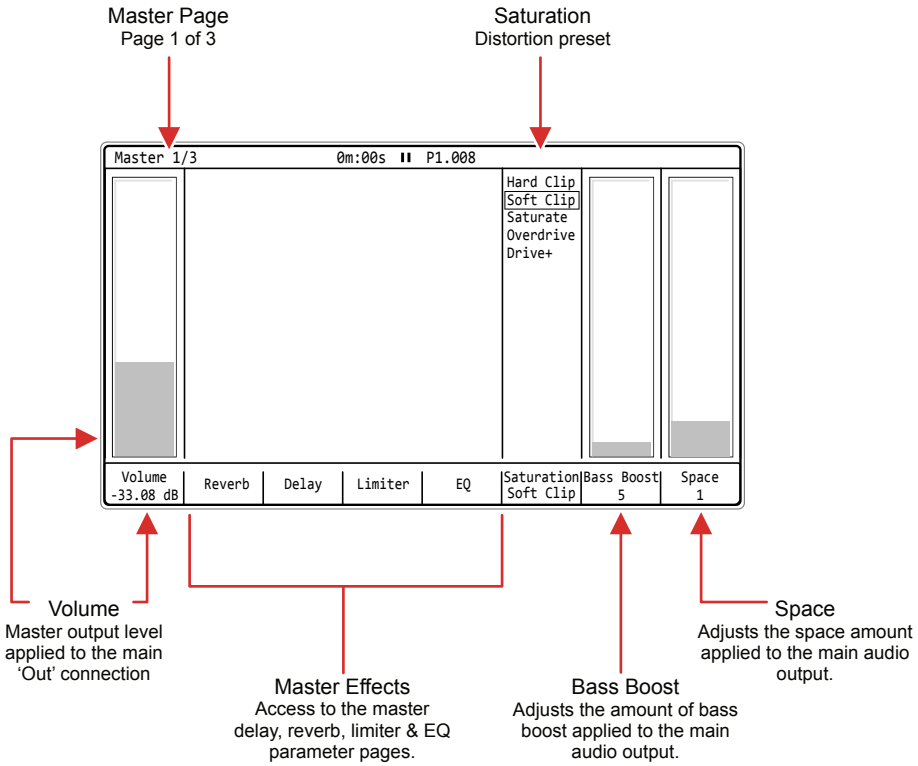
8.1 Master Pages - Audio Control

NOTES

Audio is controlled in the Master pages of which 3 are available. This is where the Tracker+ mixer is found to control the audio levels and also the master effects. This section will concentrate on the audio level and routing controls. The Master effects are covered in another section.

Master - Page 1

The Master mix is the first page in the master pages and contains the main output level as well as a series of effects and access to the master reverb and delay effects. Rendered audio exports of the 'master' i.e. all tracks, uses the volume level and functions in Master page 1.

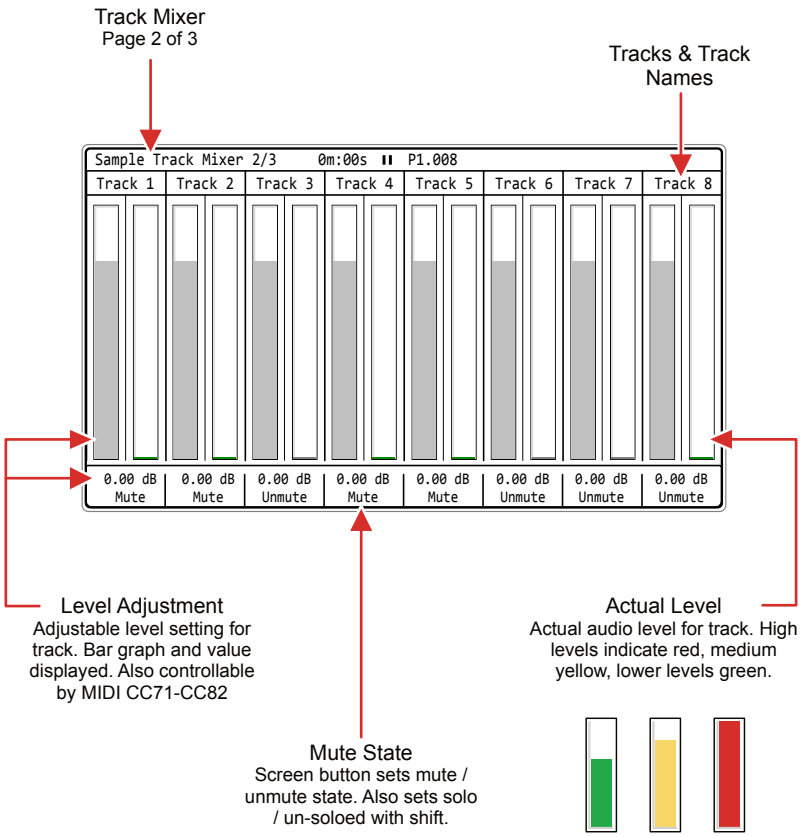


Function	Command
Navigate Options	Press [Left] or [Right]
Edit Parameter	With option selected, Turn (Jog) or Press [Up] or [Down]
Select Effect Page	Press Track Screen Button 2 [*Reverb*], 3 [*Delay*], 5 [*Limiter*] or 6 [*EQ*].
Quick Level Adjust	Hold [Master] + Turn (Jog)

NOTES

Sample Track Mixer - Page 2

The Master page controls the sample track volume levels. Each of the 8 tracks is displayed with the real time level bar graph and the current setting in the bar graph and the value shown in the track label. Tracks rendered as individual stems will use the levels set for tracks. Note that track names can be edited in this page by pressing [Rec].



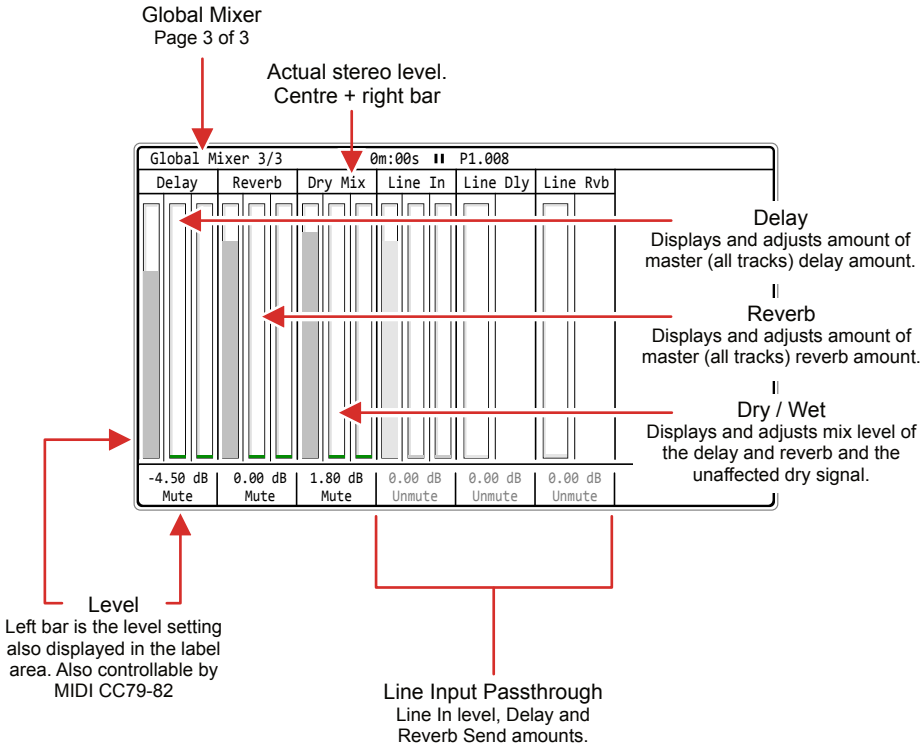
Function	Command
Adjust Track Level	Hold Track Screen Button 1-8 + Turn (Jog) or Press [Up] or [Down]
Mute Track	Press Track Screen Button 1-8 to toggle Mute / Unmute
Unmute Track	Press Track Screen Button 1-8 to toggle Mute / Unmute
Solo Track	Hold [Shift] + Press Track Screen Button 1-8 to toggle Solo on/off
Edit Track Names	Press [Rec], Edit Mode. Press Track Screen Button 1-8 for track to rename.

Mute Button Behaviour.
In the master section mute is applied when the button is released after being pressed.This is different to muting in the Pattern section where mutes are applied immediately that the button is pressed.

NOTES

Global Mixer - Page 3

The Global Mixer is the third page in the master pages and contains the line in level and line in delay / reverb send levels for the pass through. Also the overall master delay, reverb level and dry / wet mix. These can all be muted and all soloed, with the exception of the line delay and reverb which can only be muted / unmuted.



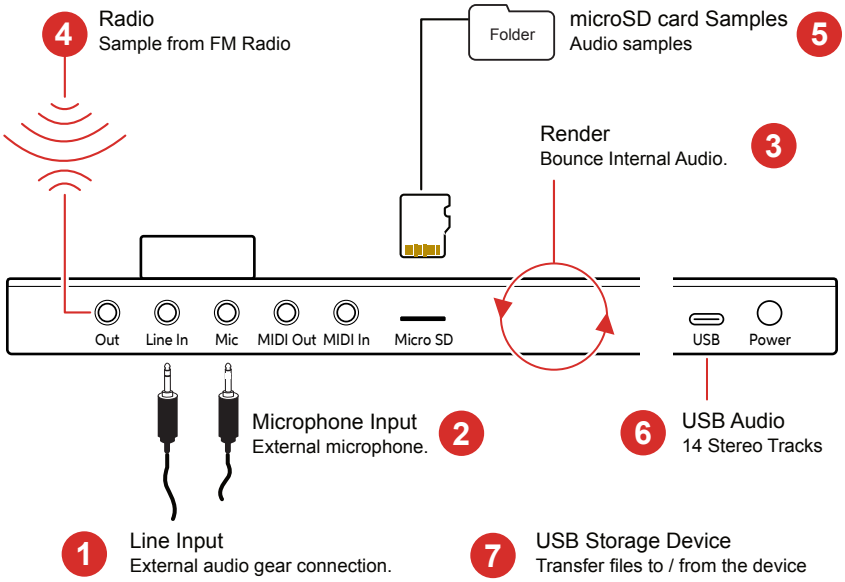
Function	Command
Adjust Level	Hold Option Screen Button 1-6 + Turn (Jog) or Press [Up] or [Down]
Mute Option	Press Option Screen Button 1-6 to toggle Mute / Unmute
Unmute Track	Press Option Screen Button 1-6 to toggle Mute / Unmute
Solo Option	Hold [Shift] + Press Option Screen Button 1-4 to toggle Solo on/off

Mute Button Behaviour.
In the master section mute is applied when the button is released after being pressed.This is different to muting in the Pattern section where mutes are applied immediately that the button is pressed.

NOTES

8.2 Audio Sources

There are a number of sources where Tracker+ can access audio. Some of which are 'live' sources and can easily be sampled. Others manually managed or rendered within the device.



1 Line Input
3.5mm Input jack which allows Stereo (TRS) audio inputs. Stereo signals are converted to mono when recorded for the L & R channels can also be selected individually.

2 Mic Input
3.5mm Microphone Input jack which allows Mono (TS) audio inputs. This does not supply 48V phantom power so typically use a dynamic microphone. Mic has a Low Gain - LG and High Gain - HG option.

3 Render
A feature which is available with the internal functions is render. This bounces or exports an audio file based on the selected pattern / tracks which can then be made immediately available as a sample or to use from the instrument list.

4 FM Radio
Tracker+ has an inbuilt FM radio. Reception can be improved by connecting an arial or cable into the output connection. The reception region can be set in the radio function. Radio can be recorded and sampled directly within Tracker+.

5 microSD Card
Audio samples are stored on the microSD Card. These can be sampled and stored from within Tracker+ but also can be manually transferred onto the microSD card from and external source using a PC or Mac.

6 USB Audio
The USB Audio interface allows sending 14 stereo tracks: a master stereo track, eight stereo sample-based tracks, three synth instrument tracks, reverb and delay sends to a connected DAW or compatible audio device. Tracker+ can also receive USB Audio.

7 USB Storage Device
Audio files can be transferred to/from the Tracker+ with a PC or Mac. Tracker+ and the microSD acts like a remote hard drive when connected.

Tracker+ is supplied with a 3.5mm Stereo Male Jack to 2 x 6.3mm Mono Female Socket adapter to allow interfacing with external gear and using the more common 6.3mm mono cables.

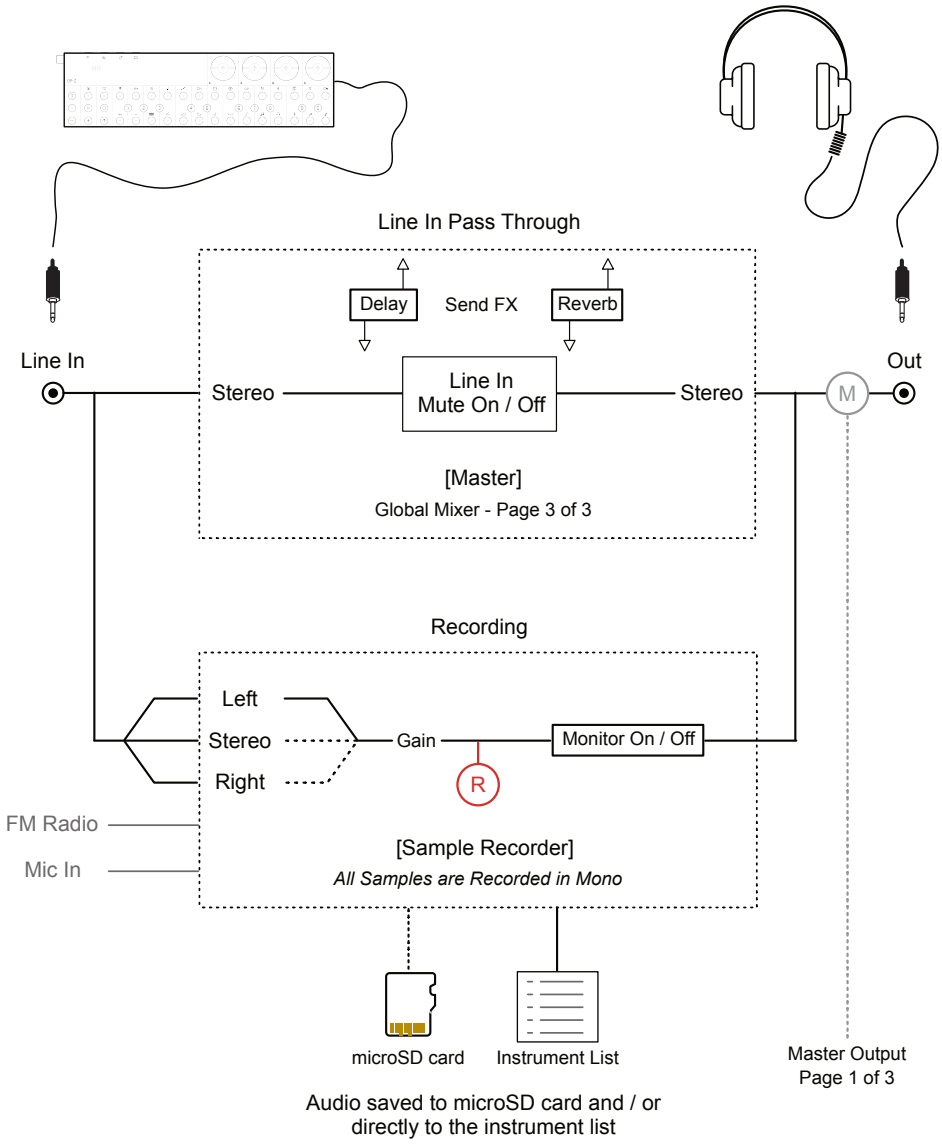
8.3 Audio Inputs

NOTES

Tracker+ has two audio inputs that provide a source to sampling and recording from external sources. The physical inputs are located on the rear of the device and provide access for the Mono TS microphone and Stereo TRS line jacks or the supplied 3.5mm to 2 x 6.3mm adapter.

Line Input

The input can be selected between Left, Right or Stereo. While these are selectable options Tracker+ records in mono. Tracker+ can record audio or play a pattern audio but not both together at the same time. Playing patterns will therefore output MIDI but not audio if sample recording is in progress.



NOTES

The sample recorder page can select sampling input, but the general input is defined in the 'Config' parameter settings. The Mixer passthrough audio operates in stereo.

SETTING THE SAMPLER LINE IN STEREO / MONO OPTION

1. Press [Config] to open the configuration settings.
2. Navigate with the 1st and 2nd Screen buttons to select 'General'.
3. In the central window pane, Press the 4th or 5th Screen buttons to navigate to 'Line in channel'.
4. Press [*Enter*] screen button to select the options. The pop-up window will appear.
5. In the middle page pane, Press the 4th or 5th Screen buttons, Arrows or Turn (Jog) to navigate to select 'Stereo', 'Mono Left' or 'Mono Right'.
6. Press [*Apply*] or [*Cancel*] screen button to exit without changing.

SETTING THE MIXER LINE IN PASS THROUGH PARAMETERS

1. Press [Master] to open the configuration settings. Navigate to the Global Mixer, Page 3 of 3, by Pressing [Master].
2. Line In by default is muted. Press [*Unmute*] screen button for the Line In channel to toggle mute / unmute. If unmuted this will be [*Mute*].
3. Line In can be soloed. Press [Shift] + [*Solo*] screen button for the Line In channel to toggle solo on or off.
4. Hold [*Mute*] screen button for Line In + Turn (Jog) to adjust level.
5. The Line in signal can also be sent to the master Delay and Reverb effect. These channels may also be muted. Press [*Mute*] / [*Unmute*] to toggle the Mute / Unmute State of the respective screen button.
6. To adjust the Delay and Reverb send amount, Hold [*Mute*] for the respective effect screen button + Turn (Jog).
7. The Mixer bar graphs will show the audio in real time for the level, dimmed if muted and bright if audible / unmuted. The level and send amount settings are also shown on the bar and in the label.

NOTES

Mic Input

The microphone input is not represented in the mixer as it is just used for sample recording with no pass through, although audio monitoring does exist in the sample recorder. The input is a mono audio input connected by the 3.5mm mic in. A few things should be considered when using a mic.

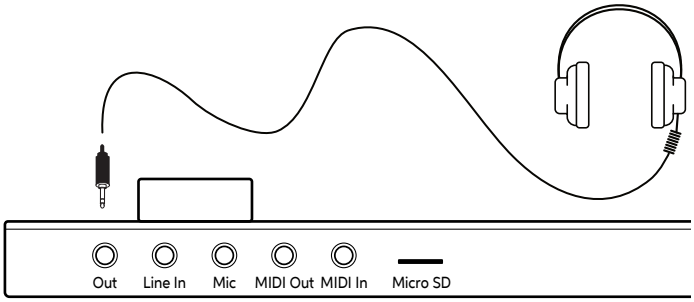
- Tracker+ does not supply 48V Phantom power normally used for condenser microphones. Dynamic mics are therefore advised.
- The Mic selection input is in the sample recorder. Two options exist, Mic LG (Low Gain) and Mic HG (High Gain). The selection will depend on the microphone being used. Microphones with a strong driver on the input may need a lower gain setting to avoid clipping. Microphones with a weaker driver on the audio may need a high gain setting to ensure a better dynamic range.
- The microphone may use a stereo TRS or Mono TR connection, however recording from a microphone will always be in mono.
- Recording with a microphone follows similar principles to line-in. The gain may need more pre-adjustment before recording due to the nature or microphones and recording.

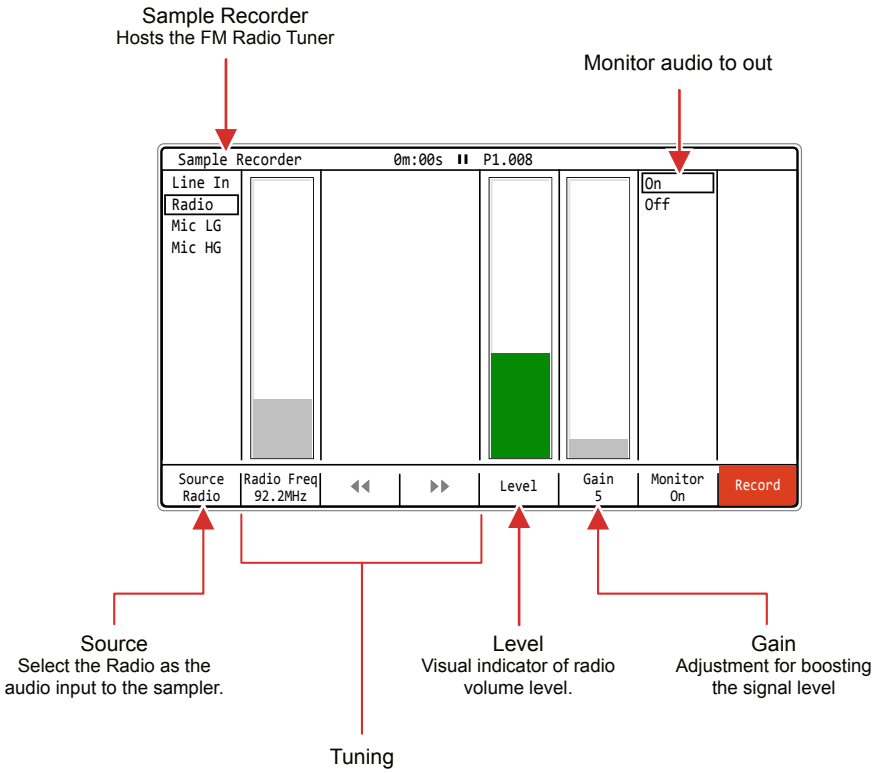
NOTES

8.4 FM Radio

Tracker+ has a built in FM Radio. This can be used for sampling and capturing various static or radio signals. Be aware of copyright when sampling radio especially if considering to release a commercial track.

Any cable plugged into the Audio Out jack will act as an antenna for the FM Radio.





Recording of audio can be initiated using the [*Record*] screen button. Also can be triggered on this page directly by the [Rec] button

NOTES

The radio can be heard on headphones or from the audio out while monitoring is on in the sample recorder. Tuning is based on the region selected and signals in the range of the current location.

SETTING THE FM RADIO REGION

1. Press [Config] to open the configuration settings.
2. Navigate with the 1st and 2nd Screen Buttons to select the 'General' settings.
3. In the central window pane, Press the 4th or 5th Screen buttons to navigate to 'Radio Region'.
4. Press [*Enter*] screen button to select the options. The pop-up window will appear.
5. In the central window pane, Press the 4th or 5th Screen buttons to navigate to select 'Europe', 'US', 'Australia', or 'Japan'. This adjusts the radio frequencies to suit the region, but try experimenting with settings.
6. Press [*Apply*] or [*Cancel*] screen button to exit without changing.

TUNING THE FM RADIO

1. For best results plug headphones into the out connection to act as an antenna.
2. Press [Sample Recorder] which will allow access to the Radio.
3. Press [*Source*] screen button, to toggle to 'Radio'.
4. Press [*Monitor*] screen button to toggle monitoring the audio output on or off. Listen into the signal while tuning to find a desirable channel.
5. Press [*Radio Freq*] screen button.
6. Turn (Jog] to tune the frequency signal. Alternatively, Press 3rd or 4th Screen buttons.
7. If necessary, Press [*Gain*] screen button. Turn (Jog) to increase or decrease the signal gain and audio level.

NOTES

8.5 Sample Formats

The general principle when using trackers is to use short samples. Creativity often is inspired by limitations. While microSD card size is large and can hold a lot of high quality samples, Internal memory in Tracker+ is at a premium. The balance between quality and file size is an important one.

Project Sample Time
Up to 12 Minutes per Project (Mono) or almost 6 Minutes per Project (Stereo) at standard quality audio imports.

Individual Sample Recording Time
Maximum sample length is approx 350 seconds per stereo sample and approx 700 seconds for mono samples.

Sample Format
The internal sampler engine operates at 44.1kHz, 16, 24, float 32 Bit, WAV files

Instrument List
Samples can be loaded from the microSD card and into Tracker+ memory. A sample loaded to the internal list becomes an instrument.

Browser Import Format
Uncompressed Wav files. Imported audio is converted to 44.1kHz, 16 bit, Mono.

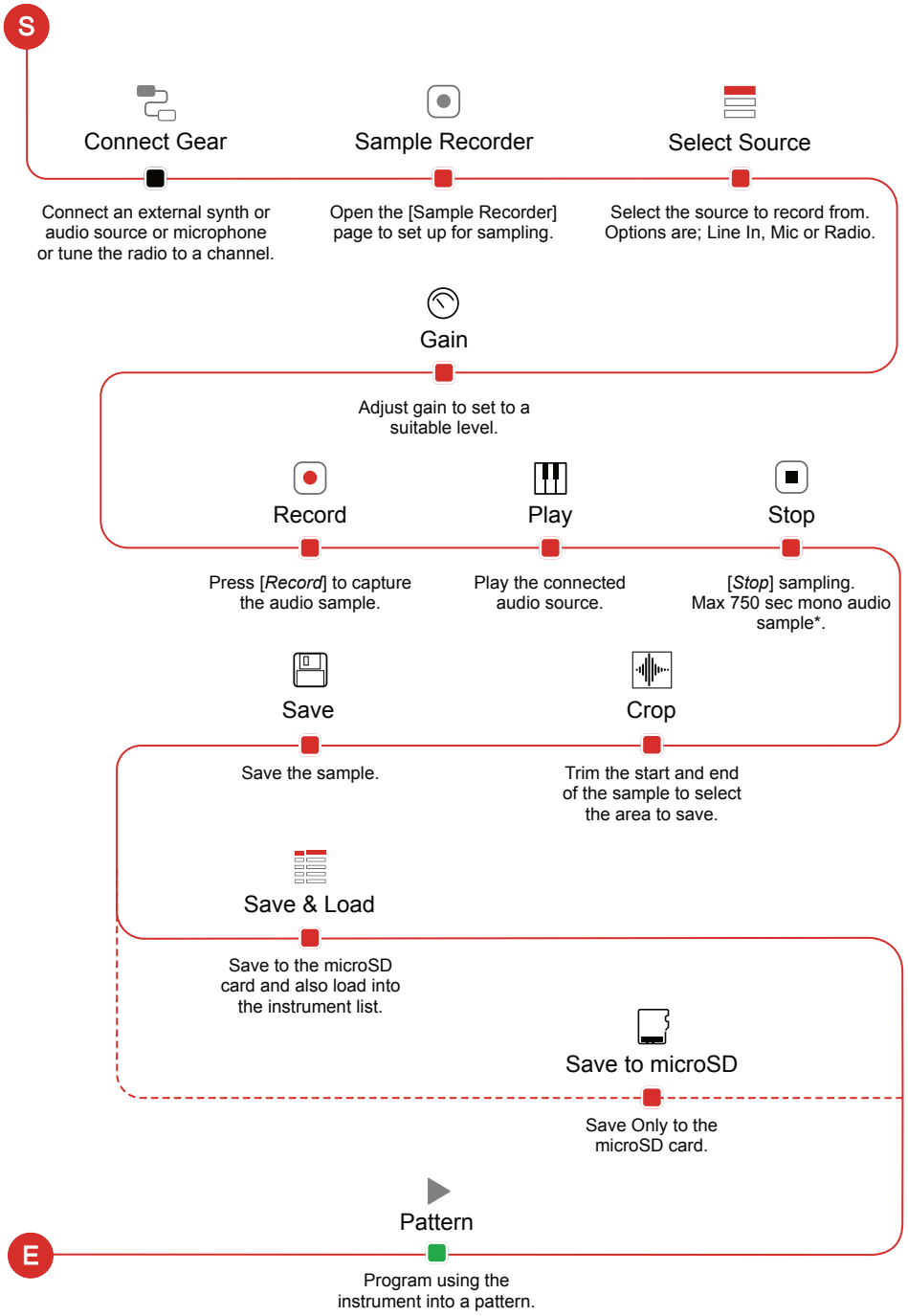
Browser Import File Size
Large files can be trimmed to import. Low quality import mode also possible to reduce the file size.

Rendered Output Files
Stems created are PCM Wav files. The exported audio file is 44.1kHz, 16 bit.

8.6 Recording Audio Workflow

NOTES

Sampling in Tracker+ takes place in the ‘Sample Recorder’ page. This is the first step in the process and is followed by editing the audio captured. Sampling in this page can be from the Line In, Radio or Mic audio sources.



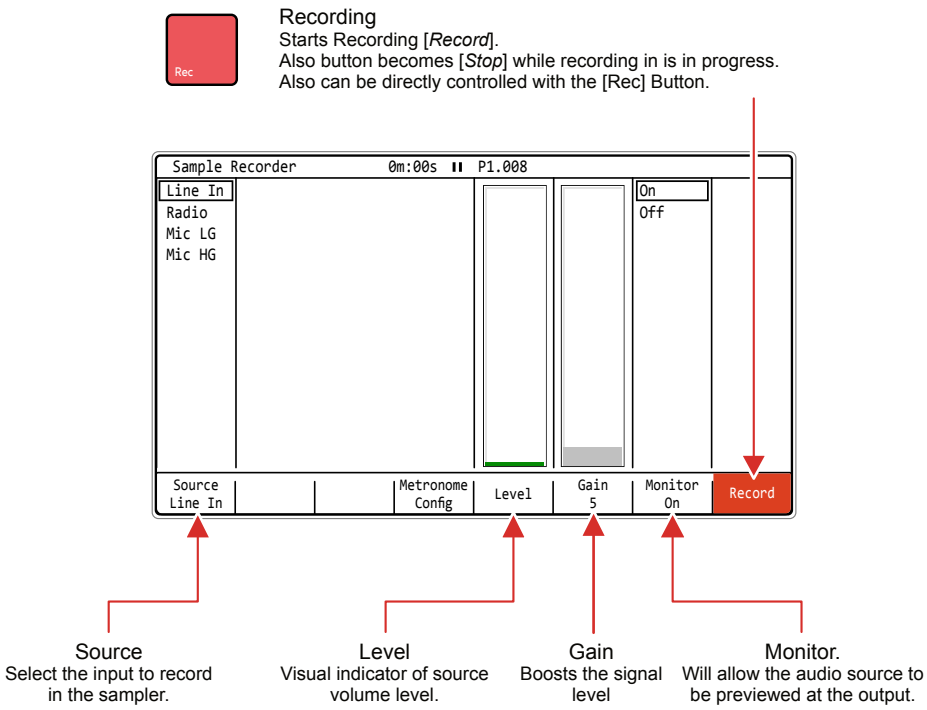
* Sample Time, Max ~700 Sec Mono or ~350 Sec Stereo

NOTES

8.7 Sampling

Everyone will develop a personal workflow for sampling and the process may differ due to the source to be recorded. This meets the maximum project sample time.

The main page used at the sampling stage is the [Sample Recorder]. Here the parameter settings can adjusted pre sampling. The selected source will determine the available options. Controlling the start and stop recording process is triggered within this page.



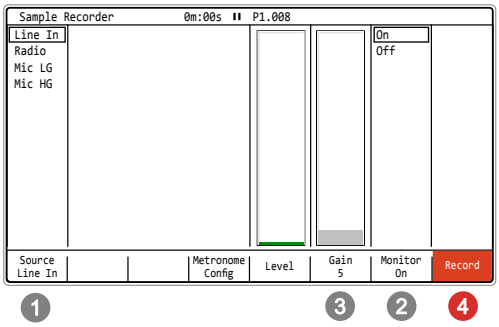
When using the USB audio source, ensure Tracker+ is connected to a USB host and the audio input is set correctly in the config settings for the USB option..

Metronome Config
The [*Metronome Config*] screen button gives a quick access to the settings for the metronome. This button is essentially a shortcut to the config menu, metronome settings.

NOTES

Sampling Process

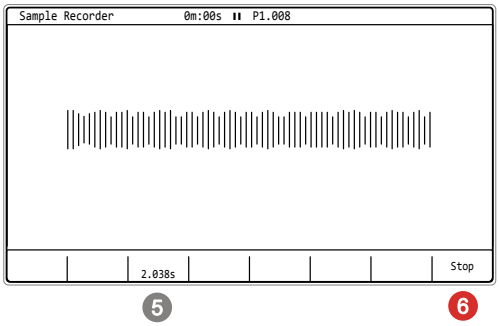
Starting by selecting the [Sample Recorder] page



1 As pre-recording optional actions, select the audio [*Source*], set [*Monitor*] to on and adjust
2 the [*Gain*] to establish a suitable recording
3 level. External devices should be auditioned while adjusting the gain to hear the effect.

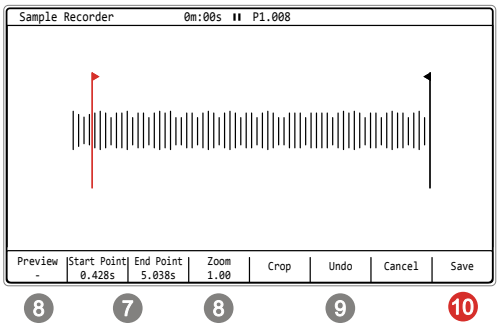
4 Press [*Record*] screen button, to start sampling the incoming audio.

Play the external device.



5 The sampler will capture the audio into the Tracker+ memory buffer and display the recording time. Recording will automatically stop if the memory is full at ~750 Secs, Mono.

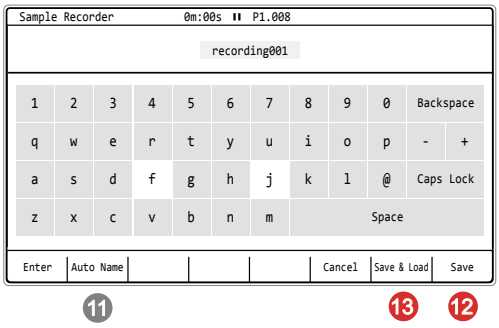
6 Press [*Stop*] screen button, to manually stop the sampling process.



7 Trim the [*Start*] and [*End*] points of the recorded sample while previewing the audio
8 to get the positions correct. Also [*Zoom*] in or out as a visual aid for precise editing.

9 The [*Undo*] option can reset previous state if errors are made.

10 Press [*Save*] when editing is complete. Alternatively Press [Cancel] to exit without saving. Confirm cancel with [Yes].



11 Type in a name for the sample or use [*Auto Name*] to generate a system name. Pads act as the qwerty keyboard, [*Enter*] will enter a highlighted character.

12 Press [*Save*] screen button, to save the file into the microSD card 'Recordings' folder.

13 Press [*Save & Load*] screen button, to save the file into the microSD 'Recordings' folder and also load the sample into the instrument list. The instrument list will also open.

NOTES

SAMPLING IN THE SAMPLE RECORDER

1. Press [Sample Recorder] to open the sampler page.
2. Setup the input and levels.
   - Ensure the correct input to record is selected, Press [*Source*] screen button to toggle selections.
   - Select monitoring ON, Press [*Monitor*] screen button to toggle.
   - Adjust gain to suit input level. Press [*Gain*] and Turn (Jog). Ensure audio to record is audible and at a good enough level. The Level meter should not be lit red. Green / amber is good, approx 70%.
3. Press [*Record*] screen button or [Rec] to start sampling. It may be useful to play the device to record before starting to record or after depending on its nature. Recording time that has lapsed is displayed.
4. Press [*Stop*] screen button or [Rec] to stop sampling. It may be useful to also stop playing the recorded device. If stop is not initiated, sampling will continue until the memory is full.
5. The sample can be cropped before saving. This allows removal of any gaps or unwanted audio at the start end. The [*Zoom*] screen button, then Turn (Jog) may help to get close up to areas to trim.
6. Press [*Start*] screen button, then Turn (Jog) to set the start point. Press [*End*] screen button, then Turn (Jog) to set the end point. It may be an iterative process to set both as desired.
7. Press [*Crop*] screen button to trim the sample to the selected start and end points. The sample is cropped and option to save is presented.
8. Save the sample, Press [Save] screen button.
9. The sample can be manually named in the text editor window using the Pads as the keyboard (Slower - but text is more relevant to the sample type). Alternatively, Press [*Auto Name*] screen button to set a system generated name (quicker - but less relevant).
10. Press [*Save & Load*] screen button. This saves to the microSD card ‘recordings’ folder and also loads to and opens the instrument list.
11. Alternatively, Press [*Save*] screen button. This saves directly to the microSD card ‘recordings’ folder only.

8.8 Rendering and Exporting Internal Audio

NOTES

Sampling is the process of recording and capturing audio, typically from external sources in the ‘Sample Recording’ page. Sampling of internal audio is performed through a different process where the audio is rendered.

Rendering is available in two levels:-

- Pattern Level. The render function is available from within the ‘Pattern’ pages and is performed on selected parts of a pattern. This is useful to lock in FX1 / FX2 and send effects into an audio sample or to combine multiple note tracks, rendered together as a chord sample.
- Project Level. The export function is accessible in the ‘File’ pages. This will allow rendering of complete patterns, individual tracks, samples or entire songs, saving directly to an microSD card. This is useful to create full stems and mix / remix in a DAW, use in other package or distribute to others.

Quick Rendering a Pattern Selection

	Track 1	Track 2	Track 3	Track 4
1	D6 03 ---- ----	E6 03 ---- ----	D6 03 ---- ----	D6 03 ---- ----
2	D6 03 ---- ----	E6 02 ---- F 4	D4 04 ---- ----	D6 03 ---- T 50
3	D6 03 ---- V80	F6 02 ---- ----	D4 04 ---- C 50	D6 03 ---- ----
4	D6 03 ---- ----	F6 02 ---- F 4	D4 04 ---- ----	D6 03 ---- TSTP
5	D6 03 ---- ----	E6 02 ---- m 5	D4 05 ---- C 75	D6 03 ---- ----
6	D6 03 ---- ----	E6 02 ---- ----	D4 05 ---- ----	D6 03 ---- ----
7	D6 03 ---- ----	F6 02 ---- m -5	D4 05 ---- C 75	D6 03 ---- T 50
8	D6 03 ---- V 60	F6 02 ---- ----	D4 04 ---- C 50	D6 03 ---- ----
9	D6 03 ---- ----	D6 02 ---- TSTP	D4 04 ---- ----	D6 03 ---- TSTP
10	D6 03 ---- ----	D6 03 ---- ----	D6 03 ---- ----	D6 03 ---- ----

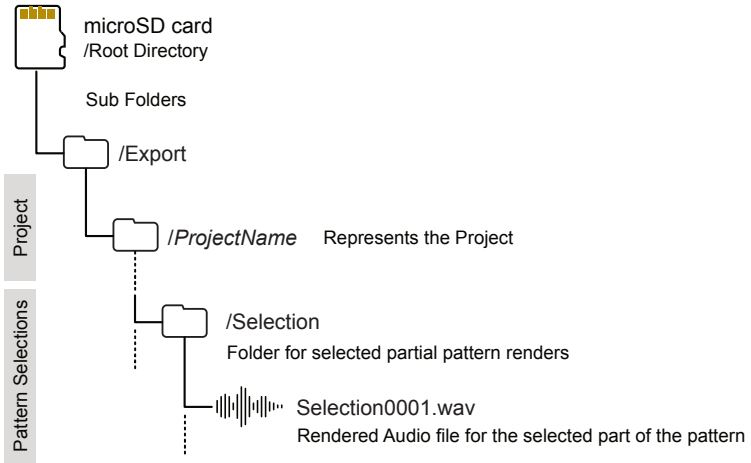
Step Selection
A number of steps in a pattern, across various tracks can be rendered into one single sample. The pattern page is used with [Rec] mode on.

Folder location when using the render option in the pattern page.
/Export/ *ProjectName*/ Selection - Will save to current project name

NOTES

RENDERING SELECTION IN A PATTERN

1. Press [Pattern] to select the pattern mode page.
2. Press [Rec] to select record edit mode.
3. Hold [Shift] + [Up], [Down], [Left], [Right] to select the range to render. For example, select across 3 tracks, 8 steps, of a percussion sequence.
4. Press [*More*] screen button to select more pattern options.
5. Press [*Render Selection*] screen button in pattern options page 2. This will be dimmed and unavailable if [Rec] is off.
6. The naming page appears. A name can be edited or press [*Auto Name*] screen button to automatically apply a name. Manually editing the name offers an opportunity to make the name relevant, although a longer process. Auto name may be less relevant in terms of the name, but is a faster process.
7. When the name is entered, Press [*Render & Load*] screen button. This option will not only render the audio but also automatically load the sample into the instrument list. The pattern will halt playback if playing. When the file has been 'exported', the instrument list will open ready to preview and the sample selected.
8. Alternatively, Press [*Render Selection*] screen button. This option will render the audio. The pattern will halt playback if playing. This will render and save onto the microSD card.
9. The microSD card save location is in the 'Export/ *ProjectName*/ Selection' folder for both render options. Rendered files are 44.1kHz, 16 bit. Files are accessible from sample loader.

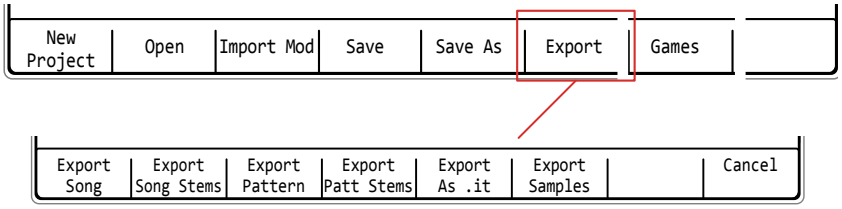


NOTES

Rendering and Exporting Stems

The function to render and export full stems for tracks or full songs and patterns is found in the ‘File’ options. MIDI Clock IN must be set to Internal in the Config settings in order to render stems.

Press [File]



Folder location when using the render option in the file page.

/Export/ *ProjectName*/ Selection - Exports to the folder named for the current project

Function	Screen Button	Description
Export Song	1st	Renders an individual audio files for the selected song. Muted tracks are not rendered. The stem will cover the entire song length and are 44.1kHz, 16 Bit PCM Wav files.
Export Song Stems	2nd	Renders individual audio files for each of the 8 unmuted tracks and 2 effects, delay and reverb, all in mono. Muted tracks are not rendered. In addition a stereo mix of the complete song as an audio file. The stems will cover the entire song length and are 44.1kHz, 16 Bit PCM Wav files.
Export Pattern	3rd	Renders an individual audio file for the selected project pattern. Muted tracks are not rendered. The stem will cover the entire pattern length and are 44.1kHz, 16 Bit PCM Wav files. A unique folder is created to represent the render.
Export Patt Stems	4th	Renders individual and complete audio files for the project patterns. Muted tracks are not rendered. The stems will cover the entire pattern length and are 44.1kHz, 16 Bit PCM Wav files. This will render 11 stems (Tracks, Delay, Reverb and Master). A unique folder is created to represent the render.
Export .it files [Beta Feature]	5th	Exports the project as a file aimed to be compatible with other classic Tracker+. This includes Renoise, Schism Tracker or Milky Tracker. The .it format can be imported by Tracker+. The compatibility of the export is not guaranteed due to the variables across the Tracker model range. The LFO will be exported as an envelope.
Export Samples	6th	Exports the project .pti instrument files as .wav files. This captures instruments to audio. Exported to the microSD card within the folder, Projects/*ProjectName*/samples, named by the instrument name.

The rendering process is almost real-time based on the project duration (in fact song stems render approx 20% faster of the time duration of the playback) and operates by rendering stems one by one. This means when exporting stems the render time can be 2-3 times, maybe even longer than the original song duration. The render progress is displayed when in operation.

NOTES

RENDER AND EXPORT A FULL PATTERN

1. Press [File] to select the file options page.
2. Press [*Export*] screen button to select the export specific options.
3. Press [*Export Pattern*] screen button to render and export.
4. The currently active pattern will be rendered and exported. Any muted tracks are not rendered and therefore remain silent in the exported audio file.
5. A folder is created on the microSD card that represents the render. This is located in the /Export sub folder. The file itself will be called 'master. wav'. Each time the pattern is exported a new folder is created. The folder naming convention is:-

   *Project name*_P *Pattern number_Sequential render number*

RENDER AND EXPORT ALL PATTERN STEMS

1. Press [File] button to select the file options page.
2. Press [*Export*] screen button to select the export specific options.
3. Press [*Export Patt Stems*] screen button to render and export.
4. All tracks plus the delay and reverb audio will be rendered in mono and exported. Also a stereo master file is rendered of all tracks. Any muted tracks are not rendered and therefore remain silent in the exported audio file.
5. A folder is created on the microSD card that represents the render. This is located in the /Export sub folder. The 11 files will be called 'track 1.wav' etc, 'delay.wav', 'reverb.wav' and 'master.wav'. Each time the pattern is exported a new folder is created. The folder naming convention is:-

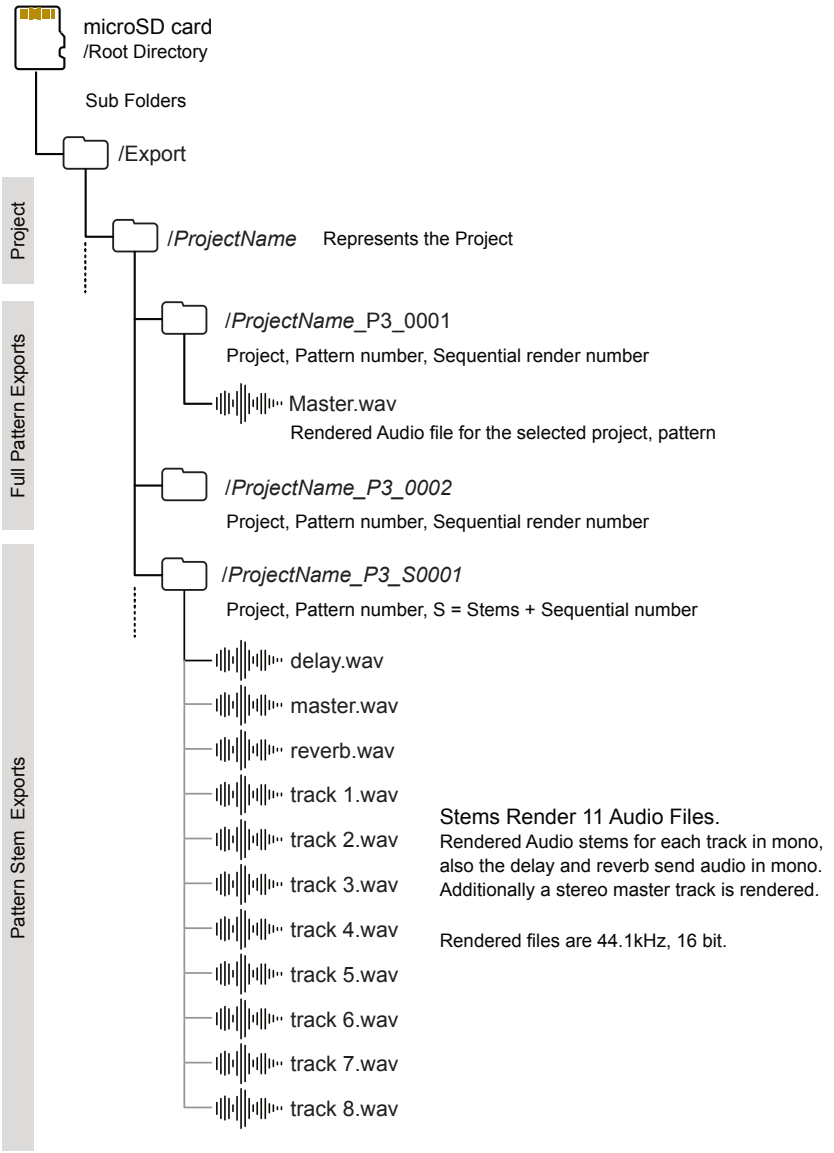
   *Project name*_P *Pattern number*_S for *Stems + Sequential number*

The option to import and export classic Tracker+ mod .it files is possible.
However this is a beta feature and may not be fully functional.

NOTES

Rendered Pattern Locations

Rendered files are exported to the /export folder and new sub-folders are created for patterns and pattern stems. These are accessible from the sample loader function pages.



NOTES

RENDER AND EXPORT A FULL SONG

1. Press [File] button to select the file options page.
2. Press [*Export*] screen button to select the export specific options.
3. Press [*Export Song*] screen button to render and export.
4. The current song will be rendered and exported. Any muted tracks are not rendered and therefore remain silent in the exported audio file.
5. A folder is created on the microSD card that represents the render. This is located in the /Export sub folder. The file itself will be called 'master. wav'. Each time the song is exported a new folder is created. The folder naming convention is:-

   *Project name*_Song_*Sequential render number*

RENDER AND EXPORT ALL SONG STEMS

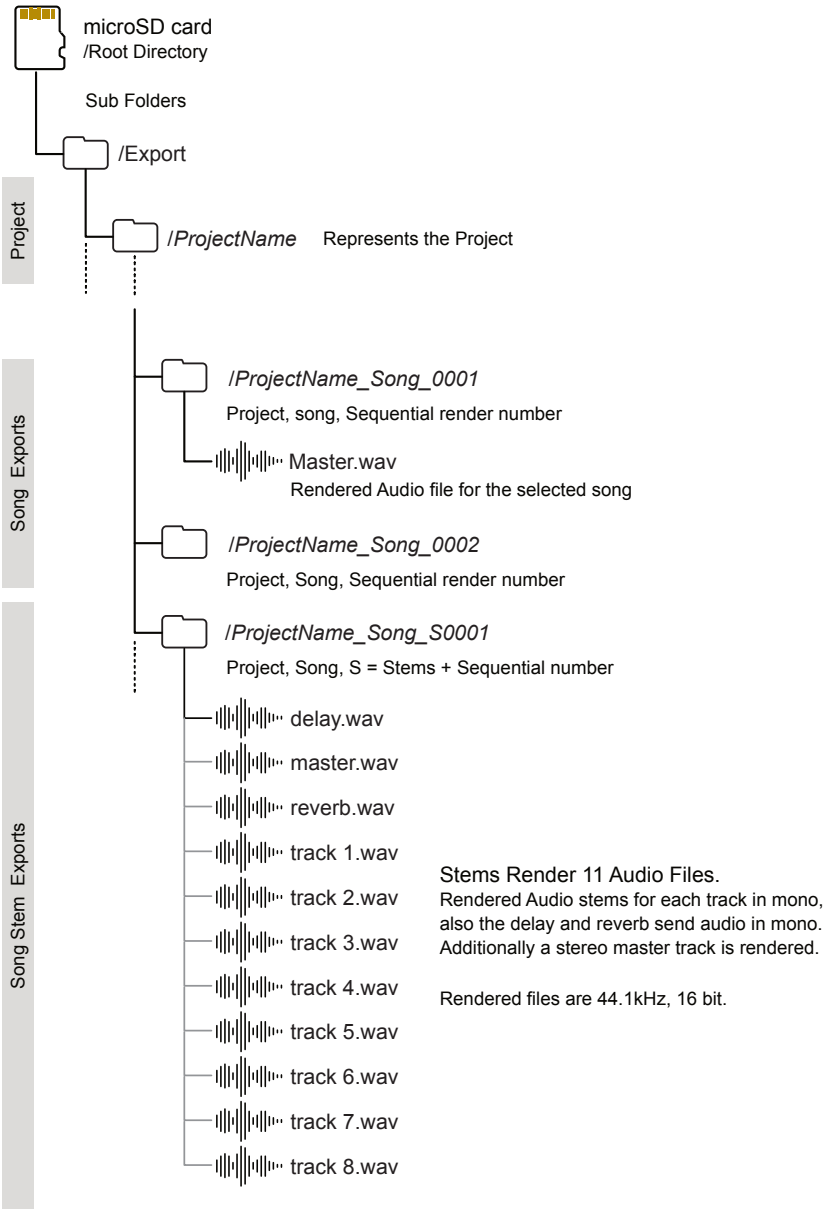
1. Press [File] button to select the file options page.
2. Press [*Export*] screen button to select the export specific options.
3. Press [*Export Song Stems*] screen button to render and export.
4. All tracks plus the delay and reverb audio will be rendered in mono and exported. Also a stereo master file is rendered of all tracks. Any muted tracks are not rendered and therefore remain silent in the exported audio file.
5. A folder is created on the microSD card that represents the render. This is located in the /Export sub folder. The 11 files will be called 'track 1.wav' etc, 'delay.wav', 'reverb.wav' and 'master.wav'. Each time the pattern is exported a new folder is created. The folder naming convention is:-

   *Project name*_Song_S *for Stems* + *Sequential number*

NOTES

Rendered Song Locations

Rendered files are exported to the /export folder and new sub-folders are created for songs and song stems. These are accessible from the sample loader function pages.



NOTES

The ability to export and import classic mod files is possible as a beta feature. There is no guarantee that third party files will be fully compatible with the Polyend Tracker+.

EXPORTING AN .IT FILE

1. Press [File] button to select the file options page.
2. Press [*Export*] screen button to select the export specific options.
3. Press [*Export As .it*] screen button to render and export the project.
4. The current project will be rendered and exported. A prompt may be presented to save the current project. The conversion and export process may take a few minutes.
5. The files are saved on the microSD card but are not visible in the sample loader as this only represents samples. The files are however visible in the Tracker+ file menu.

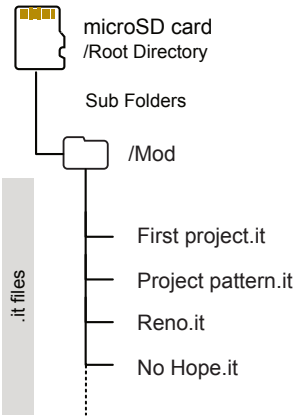
IMPORTING AN .IT FILE

1. Press [File] to select the file options page.
2. Press [*Import Mod*] screen button to select the import option.
3. Any available files are visible in the display window. If .it files have been previously exported they will be visible here. The saved .it files are managed with the original project name as the file name.
4. Navigate the file options using the [Up] [Down] or Turn (Jog) to highlight and select the desired file.
5. Press [*Import*] screen button to open the .it file. Alternatively Press [*Cancel*] screen button to exit without loading.
6. The .it File can also be deleted, Press [*Delete*] screen button to delete the file from the microSD card. Confirm deletion when prompted.

NOTES

Exported .it Locations

Exported project files are located in a dedicated /Mod folder on the microSD card. These can be backed up to a PC or third party files transferred to this location in order to import to the Tracker+.



Third party files can be used but there is no guarantee of compatibility. Files exported from Tracker+ should import easily within this process

There are a number of tracker standards and formats. The .it format is a common file type originally used as the native format for the impulse tracker. A variant .itz exists where the .it file is zipped. Other formats include .mod.

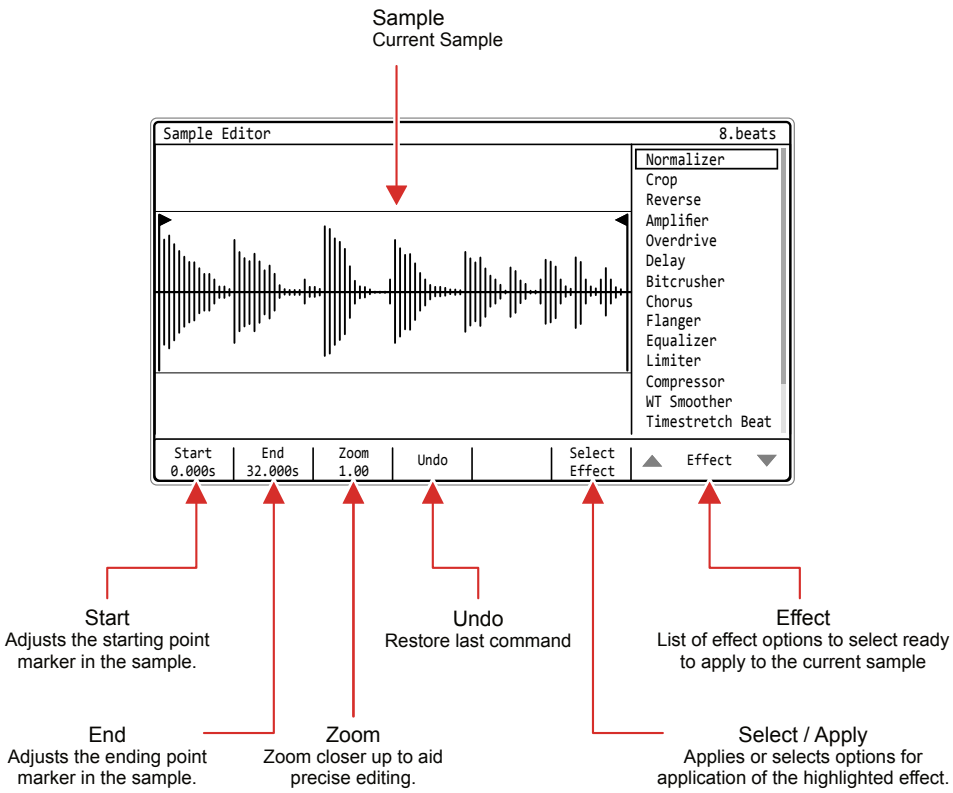
Classic trackers compatible with .it files include:-

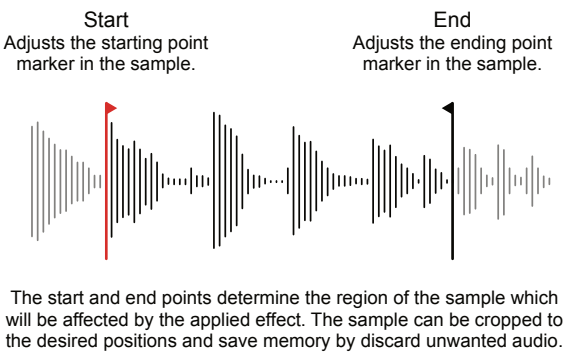
MikMod, Windows Media Player, ModPlug Tracker, Renoise, Schism Tracker, ChibiTracker, XMPlay, Cowon jetAudio.

NOTES

8.9 Advanced Audio Editing

Sampling captures audio using the 'Sample Recorder' and provides basic editing features for quick and easy use of the sample in the project. An instrument can be selected from within the sample editor by holding [Instrument]. A more advanced set of editing features exists in the 'Sample Editor' which focuses on the currently selected sample. Press a Pad to preview the audio.





The start and end points determine the region of the sample which will be affected by the applied effect. The sample can be cropped to the desired positions and save memory by discard unwanted audio.

NOTES

Audio Effects Overview

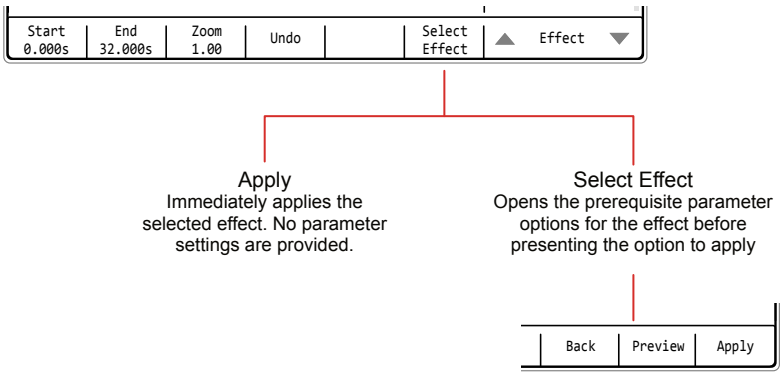
These effects are applied destructively and baked into the selected audio sample in project memory. The undo command can restore a prior state unless saved. The original file on the microSD card remains intact and is unaffected.

Effect	Description
Normalizer	Adjusts the gain on the selected sample or part of the sample between the start / end point. Gain will be based on the normalizer 0-100% level and will boost or attenuate the selected audio consistently across the selection.
Crop	Trims the audio at the start and end points and discards any audio outside of these settings. Useful to manage sample size and create samples with precise duration.
Reverse	Reverses the audio between the selected start and end point settings.
Amplifier	Amplifies the audio at the start and end points by the selected ‘amplifier’ level 0-5 in the effect. Effectively multiples the sample or selection.
Overdrive	Adds distortion into the audio sample or selected audio between start and end. Three model types 0,1,2 are selectable as well as a gain adjustment.
Delay	Introduces delay into the audio sample or selected audio between start and end. Feedback and time parameters are adjustable before applying.
Bitcrusher	Bitcrushes the audio sample or selected audio between start and end. The number of bits can be adjusted between 1-16. Also sample rate can be adjusted.
Chorus	Chorus effect giving a classic multi layered instrument sound can be applied to the audio sample or selection. Number of chorus voices 1-8 and length between 2-92ms can be adjusted before applying the effect into the audio.
Flanger	Flanger effect giving a classic out of phase layered sound can be applied to the audio sample or selection. Several parameter settings can be adjusted before applying the effect into the audio. These include Length, Offset, Depth and Rate.
Equalizer	Equalizer also called EQ affects the frequency bands in an audio signal by boosting or attenuating. The 3-Band EQ can be adjusted before applying into the sample or selected part of the sample.
Limiter	A limiter is used to control or tame dynamic peaks by reducing or limiting the transients. Normally used as a corrective or control function and associated with loudness rather than a creative effect. Includes Threshold, Attack and Release parameters.
Compressor	A compressor is used to manage and reduce dynamic range. In this application it is used as a control function. The typical parameters of Threshold, Ratio, Attack and Release are adjustable before applying to the audio sample or selection.
WT Smoother	This is a tool used to optimise and convert audio into a sample more compatible with the wavetable play mode function. The wavetable window settings are adjustable before applying to the audio sample or selection.
Timestretch Beat	Creative manipulation tool to stretch the sample time which in turn affects the sound. Used more for beat based material. The tempo, steps, micro-step and granule are adjustable before applying to the audio sample or selection.
Timestretch Note	Creative manipulation tool to stretch the sample time which in turn affects the sound. Used more for melody based material. The length and granule are adjustable before applying to the audio sample or selection.
Fade In	Quick and easy application of a fade in to the audio sample or a selected part. This operates at a fixed setting across the start / end selected part of the sample.
Fade Out	Quick and easy application of a fade out to the audio sample or a selected part. This operates at a fixed setting across the start / end selected part of the sample.

NOTES

8.10 Sample Editor Effects

The Sample Editor pages have more advanced destructive editing options. A comprehensive range of effects can also be applied to affect the audio either to correct or adjust or to create new sounds. Some effects are applied directly, while others have parameters and settings



The preview option found in the selected effect sub-page will render the effect and audition the sample with the effect applied. In the main 'Sample Editor' Page, Pressing the Pads will preview the audio.

The effect is applied to the audio sample or the audio selected between the start and end points.

APPLYING AN AUDIO EFFECT

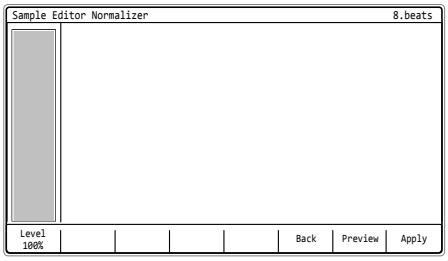
1. Press [Sample Editor] to select the audio edit options page.
2. Press [*Start*] or [*End*] and Turn (Jog) to adjust the sample selection area or leave the start and end at the edges to cover the complete sample.
3. Press [*Effect*] screen button to navigate to the effect to apply.
4. With the desired effect highlighted, ie bounding box selection, press [*Select Effect*] or [*Apply*] screen button.
5. The effect will either be immediately applied by pressing 'Apply' or will open the effect page if pressing 'Select Effect'.
6. If the effect page parameters are available, adjust as desired using the Screen Buttons and Jog control.
7. Press [*Preview*] screen button to hear the newly affected audio.
8. Press [*Apply*] screen button, to confirm and rendering the effect.

NOTES

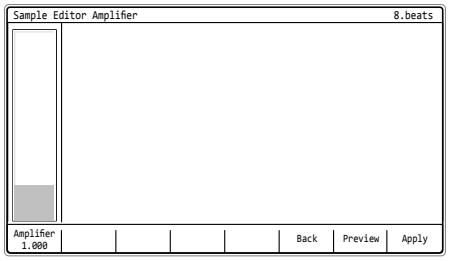
Normalizer and Amplifier

Both the Normalizer and Amplifier apply similar effects in that they adjust the gain across the audio sample or region. Normalizer gain will be based on the level setting where 100% will maximize the audio level across an entire sample by using the highest peak point as reference. This is a typical normalised application. Think of the Amplifier as a multiplier of the audio gain where 1 would be the current state and numbers below 1 will attenuate and above 1 will boost. Amplified audio can exceed the normal range

Normalizer
Gain adjustment based on the 0-100% Level



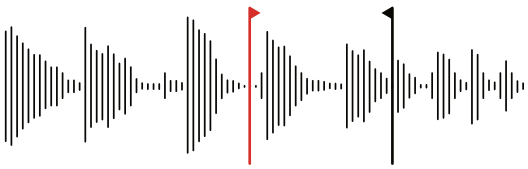
Amplifier
Gain is based on the 0.01 - 5 amplification range



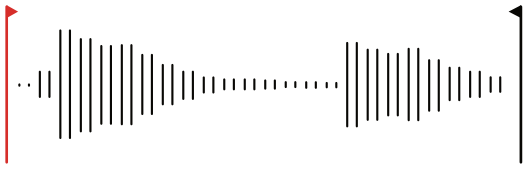
Crop and Reverse

Both the crop and reverse functions apply an immediate edit to the selected or the entire audio sample. Reverse simply reverses the audio playback direction while crop will trim and discard the audio outside of the start / end markers. Zoom may help focus on more precise marker setting locations.

Original audio sample and start / end selection.



Original audio sample cropped to start / end selection and auto zoomed to view in the full window.



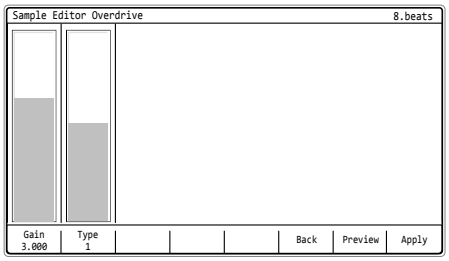
Original audio sample reversed based on the approximate start / end selection and aligned for smooth transition.

NOTES

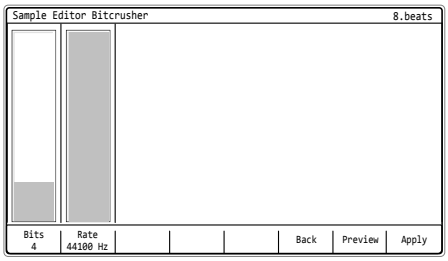
Overdrive and Bitcrusher

Overdrive is a classic distortion effect based on driving the analog audio signal into an amplifier hard. This gives a grungy, edge to the sound or full on distortion. Given the aggressive nature of overdrive the gain adjustment is a welcome feature. Bit crushing is a process which also gives a distortion like effect and is based on lowering the digital quality down from a standard 16bit, 44.1kHz and introduces a LoFi style sound.

Overdrive
Three overdrive types are available.
Gain control from 0.01 to 5.000.



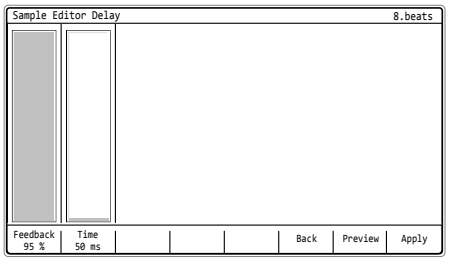
Bitcrusher
Bit reduction from 16 bit down to 1, sample rate also can be adjusted from 44100 Hz down to 500 Hz.



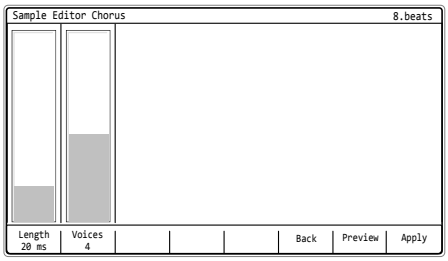
Delay and Chorus

The classic time based effects include delay and chorus. Delay creates an echo by delaying the audio signal and feeding back into the input. Chorus is similar to delay in that instead of feeding back it layers slightly delayed versions of the signal creating a thicker, wider sound.

Delay
Delay time 50ms to 5000 ms.
Feedback from 1% - 95%.



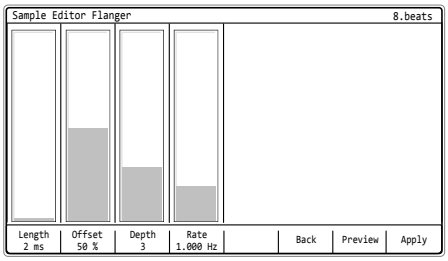
Chorus
Length has a range of 2 ms - 92 ms.
Voices refer to the layers of audio 1 - 8.



NOTES

Flanger

Flanger follows similar principles to delay by doubling the audio and introducing a slight phase shift and delay between the audio signals when playing back. Flangers offer an evolving sweeping sound.



Depth
Amount of flanger effect applied.

Rate
Speed of effect modulation.

Length
Length of delay line between signals.

Offset
Offset percentage of delay in signal

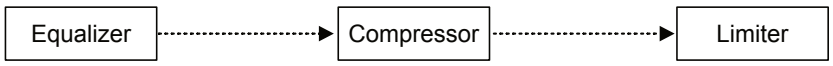
Tweak by Ear
While the flanger and perhaps other effects have labelled functions, it is much more useful to tune these parameters by ear rather than by numerical positioning. The application of each parameter will give a different output depending on the source audio material. Sounds ranging from subtle tremolo to glitchy rhythms can be found by tweaking the flanger parameters by ear. The same applies to all of the creative audio effects.

Equalizer, Compressor and Limiter.

The three effects, Equalizer, Compressor and Limiter are used for mixing and finalising a sample rather than creative variations. In music production they often find themselves towards the end of a signal chain and are used to polish and finish off a track, gluing tracks together, developing a combined tonal balance, managing loudness and mastering a final release.

In the context of Tracker+ sample editing, the process operates at an individual sample level. However the same principles can be applied as those in general music production, to finish off and generate a final output sample. While these effects are applied individually they can also optionally be performed sequentially in order depending on what the objective is. An example shown below.

Example of Effect Chain / Order



Balances tonal elements in a sound.

Provides harmonic emphasis to elements and makes space for others.

Can fix stray frequencies that affect the sound

Reduces dynamic range between high peaks and low troughs, allows overall level adjustment.

Can help sounds sit into a mix better. Layered compressed / uncompressed adds punch.

Create headroom.

Restricts and tames excessive audio peaks in a sound.

Maximises output levels and introduces a perceived loudness.

Protects digital integrity of a sample by avoiding clipping.

NOTES

Tweaking and trying different settings is encouraged on creative audio effects. While this is also possible on the process orientated tools, it is also recommended to get to know these parameters functions and purposes and have a basic understanding of their operation.

Equalizer

The purpose of an equalizer, also called EQ, is to boost or attenuate frequencies in an audio signal to either adjust the tonal characteristics or to fix unwanted frequency elements. Equalizers are typically used to shape a sounds character but also to allow a sound to sit comfortably alongside another. The sample editor EQ effect has 3 frequency bands. More coverage of general EQ functions is provided in the Master Effects section.

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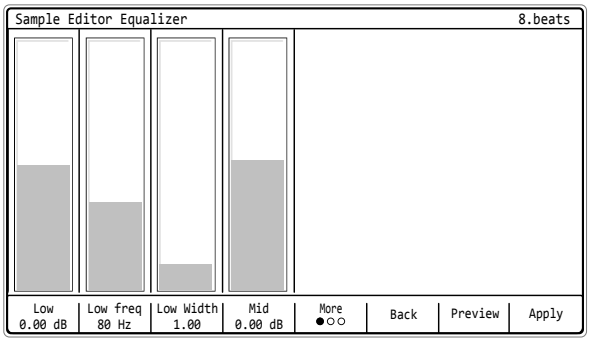

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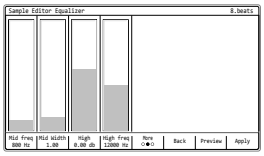

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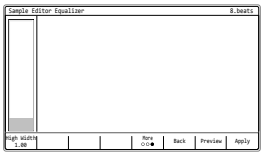


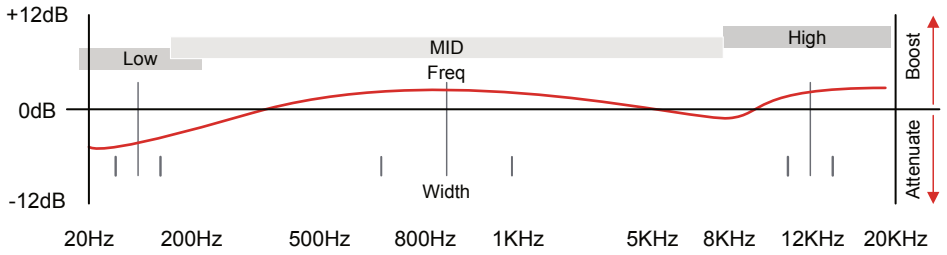
EQ Function	Description
Low	Low attenuation or boost amount, -12 dB to + 12dB.
Low Freq	Low Frequency range, 10Hz - 200Hz
Low Width	Width of EQ, also called Q. Range 0.5 to 5.
Mid	Mid attenuation or boost amount, -12 dB to + 12dB.
Mid Freq	Low Frequency range, 100Hz - 8KHz
Mid Width	Width of EQ, also called Q. Range 0.5 to 5.
High	High attenuation or boost amount, -12 dB to + 12dB.
High Freq	High Frequency range, 8KHz -20KHz
High Width	Width of EQ, also called Q. Range 0.5 to 5.

NOTES

Equalizer Frequency Ranges

An equalizer can boost or attenuate frequencies across a range. The range of normal human hearing considered in music production is 20Hz to 20kHz. The character and tonal shape of a sound can be affected by the adjustment either boosting or attenuating at points on the frequency range. This is possible within Tracker+ using the EQ function.

Frequency bands 1,2 (adjustable) & 3 (fixed) positioned across the spectrum.
Normal human hearing is in the range of 20Hz - 20KHz



SUB BASS

High levels of energy, often a low cut removes some ‘unheard’ energy and helps create headroom.Typically frequencies would be cut in this area to create clarity. Emphasis for Sub Bass, Bass and Kick Drums. Sub bass is considered the low frequencies up to 80Hz.

BASS

Typically an area which contains melodic and rhythmic elements. The mix can be changed to be fat or thin by adjustments around this area. Muddiness occurs around 300Hz so a small cut can help clarity of the mix. The mix can be warmed up around 120Hz.

MIDS

Low Mids can be overloaded with frequencies as many instruments cover this range and muddiness is a common outcome. Honkyness can creep in around 500-1K and tinniness 1-2K. Cuts can help. Vocal frequencies appear in the high mid range around normal words. 3K boost on vocals can help push through the mix. Ensure the balance between instruments and vocals is correct.

HIGH

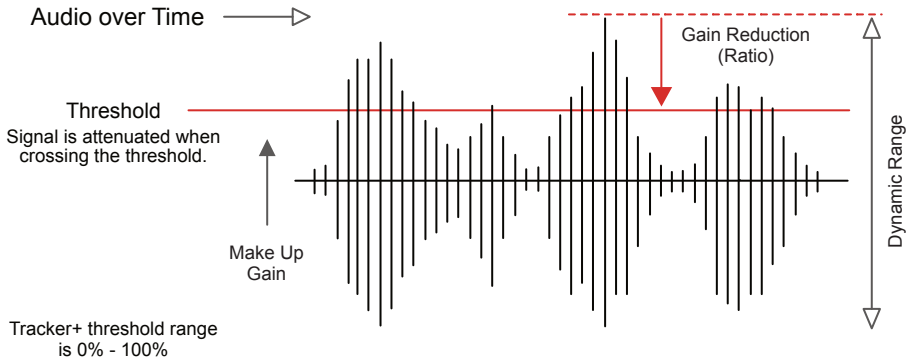
Sibilance occurs between 5-10K and letters such as S, T can stand out. De-essing can help. Typically a high shelf can add air and presence to the mix around 6K+. EQ’ing around 4-6K will affect the definition and bring the sound closer or push them further back.

NOTES

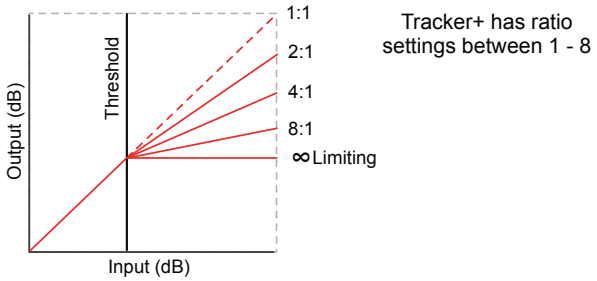
Compressor

A compressor essentially works on a signals dynamic range (difference between audio peaks and lows). Often a compressor is used to reduce the dynamic range and then allow an increase of the overall signal gain to give more punch and impact. It can also sound dull if overdone as the nuances of the dynamics are reduced. Compression techniques can extend further when layering a compressed sound (to give the impact) with an uncompressed sound (to give the dynamic subtly). This technique is sometimes called Parallel or New York Style Compression. In Tracker+ this can be created with two tracks one with compressed and other uncompressed then rendering to a single stem or sample.

How does a compressor work?

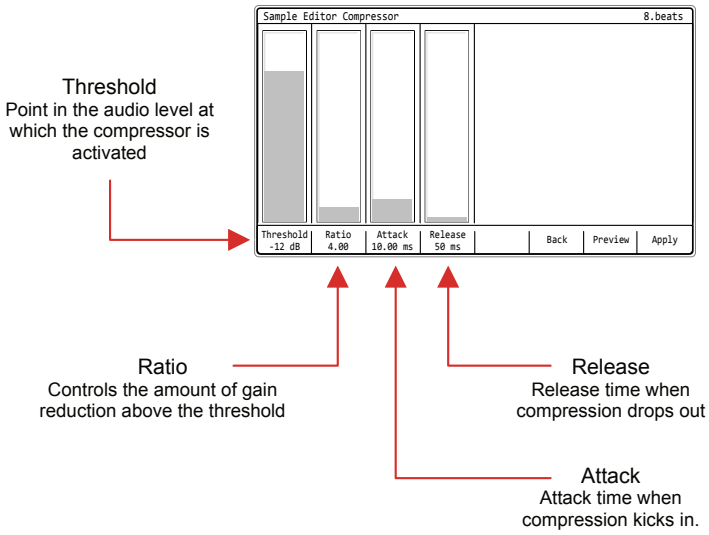


In basic terms a compressor reduces the level of any audio that exceeds a threshold. Think of this as an automatic volume control. The amount of gain reduction is determined by the ratio parameter. A ratio of 1:1 has no gain reduction while a gentle 2:1 will reduce by 1dB for every 2dB above the threshold. Higher ratios are more aggressive. The speed and reaction of the compressor is also governed by an envelope, in Tracker+ this is an Attack and Release envelope.



NOTES

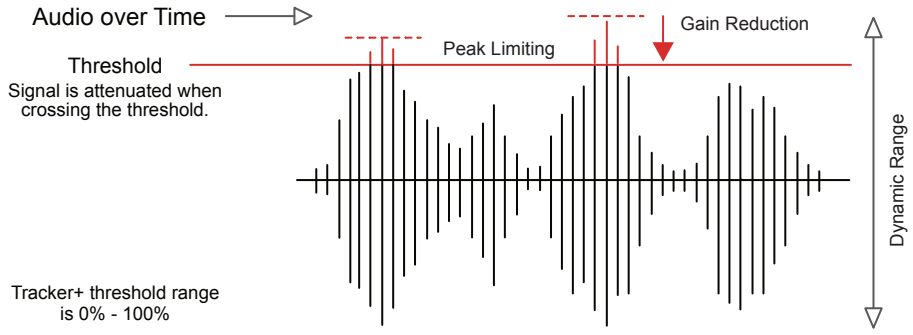
While compression is normally seen as a master effect on many devices and in DAW's, Tracker+ does not have a compressor in the master chain and relies on the master limiter. A compressor does however exist in the audio effects which can be rendered into the sample.



Limiter

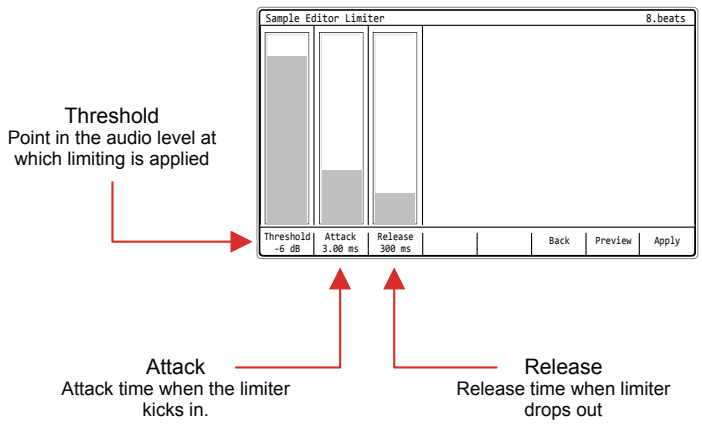
A limiter is a similar utility to a compressor. In fact when high ratios are used in a compressor, say 20:1, it is considered to be limiting. A limiter essentially protects audio integrity and avoids excessive peaks by attenuating any peaks above a defined threshold.

How does a limiter work?



NOTES

Tracker+ limiter has the basic features of threshold which is where limiting will kick in and also an attack / release envelope which shapes the behaviour of the limiter function.



WT Smoother

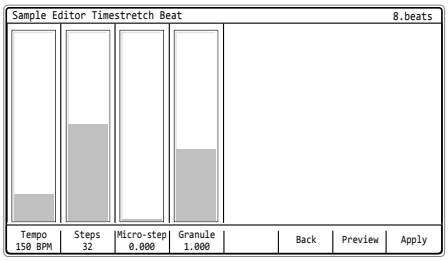
The WT Smoother is a utility for converting normal audio samples into a format more compatible with the wavetable play mode synth. Essentially this optimises the interpolation between waves in a sample giving a smoother transition across the sample. More details of the Wavetable synth is provided in the instrument section.

NOTES

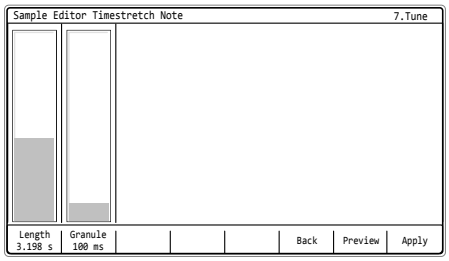
Timestretch Beat and Note.

Two timestretch functions are available in the sample editor toolkit. Timestretch is a feature that adjusts the time of an audio sample, extending or reducing its duration without affecting pitch. Timestretch beat has parameters that are better applied to rhythmic material such as drums and percussion. Timestretch note is more aligned with melodic material.

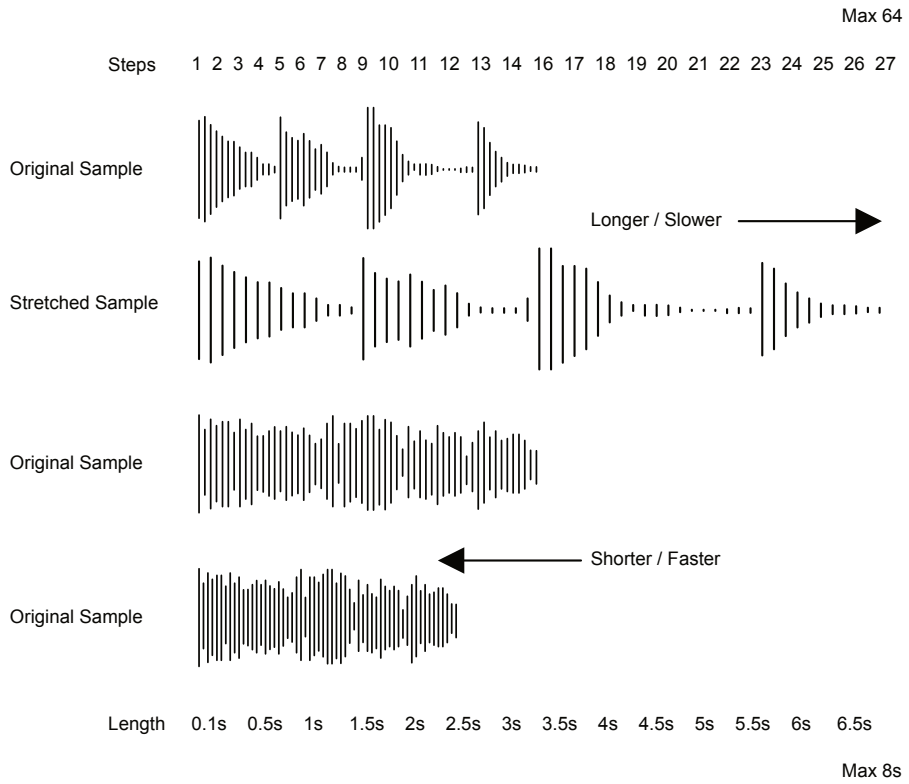
Timestretch Beat
Tempo and Steps are used to define the duration of the affected sample. Granule will affect audio quality.



Timestretch Note
Length is used to define the duration of the affected sample. Granule will affect audio quality.



Examples



NOTES

Fade In and Fade Out

The fade in and fade out utilities create a ramp up of audio level or a ramp down of audio level. The effect is applied to the audio selected between the start and end markers. Typically this would be applied at the start or end of an audio sample but equally can be applied anywhere based on the selected part of the audio sample. The effect is applied immediately with no adjustable parameters.

Examples

Original audio sample

Fade Out applied at the end of the audio to create a smooth volume transition to conclude.

Fade In applied at the start of the audio to create a smooth volume transition to begin.

Fades can be applied at any part of a sample that the start and end marker is covering eg Fade Out.

8.11 Audio Over USB

NOTES

The Tracker+ can send and receive audio over a USB connection. This will send / receive 12 stereo channels to / from a connected device. Mono channels can also be used. For example between a DAW and Tracker+. The USB Audio option is set in the USB configuration menu. Any compatible device connected to the USB connection will be able to access the audio channels from Tracker+.

USB Audio is designed for recording completed songs. Composing, and sound design over USB can cause audio playback issues. Scrolling synth patches during audio playback via USB is not recommended. Loading projects while USB audio is engaged can also cause connection issues.

Pair	Outputs	Description
1	1 & 2	Master Output
2	3 & 4	Track 1 Stereo Audio Output
3	5 & 6	Track 2 Stereo Audio Output
4	7 & 8	Track 3 Stereo Audio Output
5	9 & 10	Track 4 Stereo Audio Output
6	11 & 12	Track 5 Stereo Audio Output
7	13 & 14	Track 6 Stereo Audio Output
8	15 & 16	Track 7 Stereo Audio Output
9	17 & 18	Track 8 Stereo Audio Output
10	19 & 20	Reverb Stereo Audio Output
11	21 & 22	Delay Stereo Audio Output
12	23 & 24	Synth 1
13	25 & 26	Synth 2
14	27 & 28	Synth 3

Pair	Inputs	Description
1	1 & 2	Main

Master Output Preview & Metronome

Note that previewing samples from the microSD card in the sample loader will also send the audio to the USB master output. Metronome is also sent to the USB master output channel.

NOTES

Aggregate Device

To ensure compatibility with the USB Audio features of Tracker+ it is highly recommended to use a Mac or PC set up with an aggregate device. An aggregate device is a virtual interface created on the PC or Mac to integrate several audio in and out elements together. This overcomes any issues with multiple / separate devices used for inputs and outputs to a PC or Mac and allows audio software such as a DAW to connect seamlessly.

The process of setting up an aggregate device may differ depending on the OS of the PC or Mac and also the connected devices. A general guide is provided here as reference only.

CREATING AN AGGREGATE DEVICE - PC

1. A PC has no native options to aggregate devices. It is recommended to use an up to date audio compatible driver on the PC. The ASIO4ALL driver is a commonly used 3rd party option with PC's for audio applications. The guide below assumes using ASIO4ALL.

2. Ensure Tracker+ is connected to the PC via the USB connection.

3. Ensure the ASIO4ALL driver is selected in your chosen DAW as the audio interface and open the driver to set up the options.

4. In the ASIO4ALL window the left window pane should show all the available input and output devices.

5. Check the devices to integrate together. There may also be options to aggregate only specific inputs rather than an entire device. This is usually available when ASIO4ALL is not in 'simple view' mode.

6. Once the devices have been selected the associated inputs will appear in a DAW's audio interface options, for example 'Audio input' and 'Audio output' options in Ableton Live Audio settings. Remember that the ASIO4ALL must be the driver selected.

7. This aggregated device should be the chosen option to interface the Tracker+ to the Mac Audio. This will handle all the available inputs from Tracker+ as well as the aggregated audio I/O functions.

NOTES

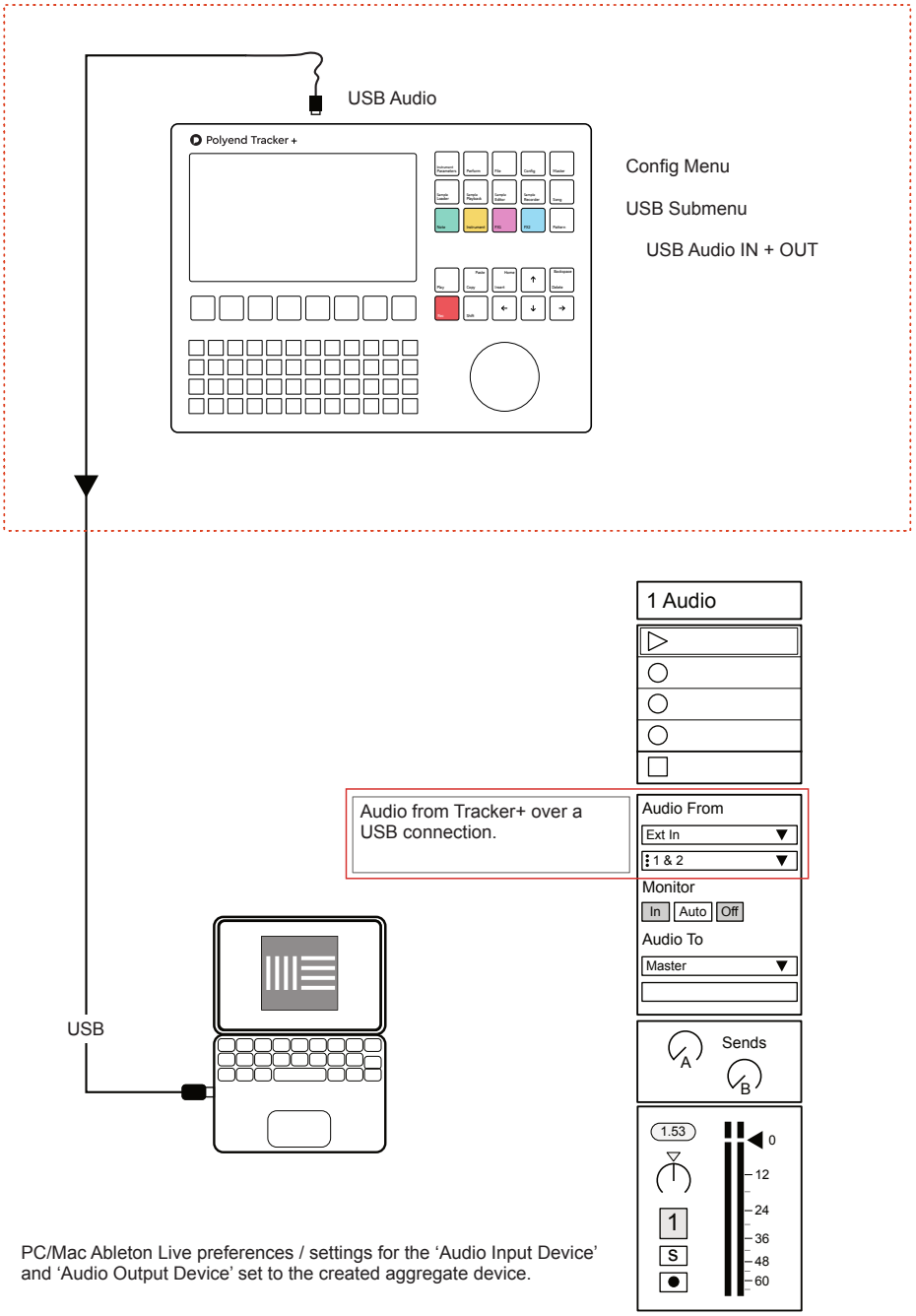
CREATING AN AGGREGATE DEVICE - MAC

1. Ensure Tracker+ is connected to the Mac via the USB connection.
2. Select and open the ‘Finder’ function on the Mac.
3. With the finder page open and selected, choose from the main header menu ‘Go’ > ‘Utilities’.
4. Double click on the ‘Audio MIDI Setup’ icon from within the presented utility options page.
5. The audio device page will open. This should show all connected devices in the left window pane and will include the Tracker+ as well as the Mac’s integrated speakers and microphone.
6. Click ‘+’ in the lower left corner and choose ‘create aggregate device’.
7. A new device is created and the selection boxes will be presented. Check the boxes of the devices to add to the aggregated device. For example Tracker+ and Speakers.
8. Click the name in the left window to rename the device if required.
9. Once the device has been created this will appear in a DAW’s audio interface options, for example ‘Audio input’ and ‘Audio output’ options in Ableton Live Audio settings.
10. This aggregated device should be the chosen option to interface the Tracker+ to the Mac Audio. This will handle all the available inputs from Tracker+ as well as the audio outputs on the Mac for example output audio to the internal speakers.

NOTES

The ability to connect audio via USB is possible. An example is when using a PC or Mac via USB which hosts a compatible application, for example Ableton Live DAW. It is recommended to connected directly between devices and not through a USB hub for best results.

Example Configuration: Tracker+out to Ableton Live.



PC/Mac Ableton Live preferences / settings for the 'Audio Input Device' and 'Audio Output Device' set to the created aggregate device.

9

Song Mode

Steps are the most rudimental part of Tracker+, bringing together an instrument, effects and a note. Steps are combined with others to create beats and melodies within a pattern. Patterns are the snippets that form a small tune or riff. A song is the highest level of structure in Tracker+ and allows the combination of patterns to play a full ‘song’ and all of its components. Each project can have 1 song, which can hold a maximum of 255 pattern slots. Each pattern slot represents all 16 tracks, 8 instrument and 8 MIDI. Song mode is the environment in which to therefore arrange patterns to form the end to end song as well as re-arranging tracks. It allows, for example the positioning of patterns to create an introduction, build ups, breaks, drops, bridge, and outro also to introduce new elements through an ambient track. Song mode can be selected by pressing [Song] and also the song page can be temporarily displayed by holding [Song] which gives a quick access option. Song mode is the last part of arranging a full track. Song stems can also be fully rendered out as audio to be used in another application to finalise a mix or for mastering or to be used to create remixes. The entire song, all tracks can also be rendered out as the final version too. As a reminder, as well as having the features for building song arrangements, song mode is also where the master tempo of the entire track is located. This can be adjusted quickly by holding [Song] + Turn (Jog).

9.1 Tempo

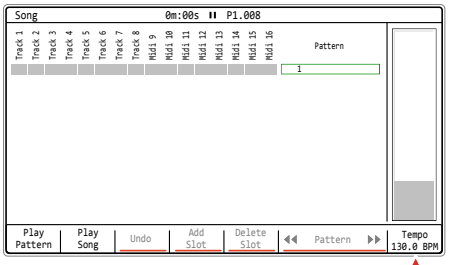
NOTES

While tempo has been covered earlier, it is a good point to remind about the tempo setting which resides in the song mode pages.

SETTING THE TEMPO

1. To quickly set the tempo, Hold [Song] + Turn (Jog). Quick changes of the jog wheel will move in bigger increments. Also [Up] or [Down] can be used instead of (Jog).
2. The longer, on page option to change tempo, Press [Song] to select song mode.
3. Hold [*Tempo*] screen button and Turn (Jog) to adjust in 1BPM increments. Also [Up] or [Down] can be used instead of (Jog).
4. Hold [*Tempo*] screen button + [Shift] + Turn (Jog) to adjust in fine 0.1 increments. Also [Up] or [Down] can be used instead of (Jog).
5. Note that tempo changes can be applied also at step level using the step effects.

Song Mode
Song arrangement mode and project tempo



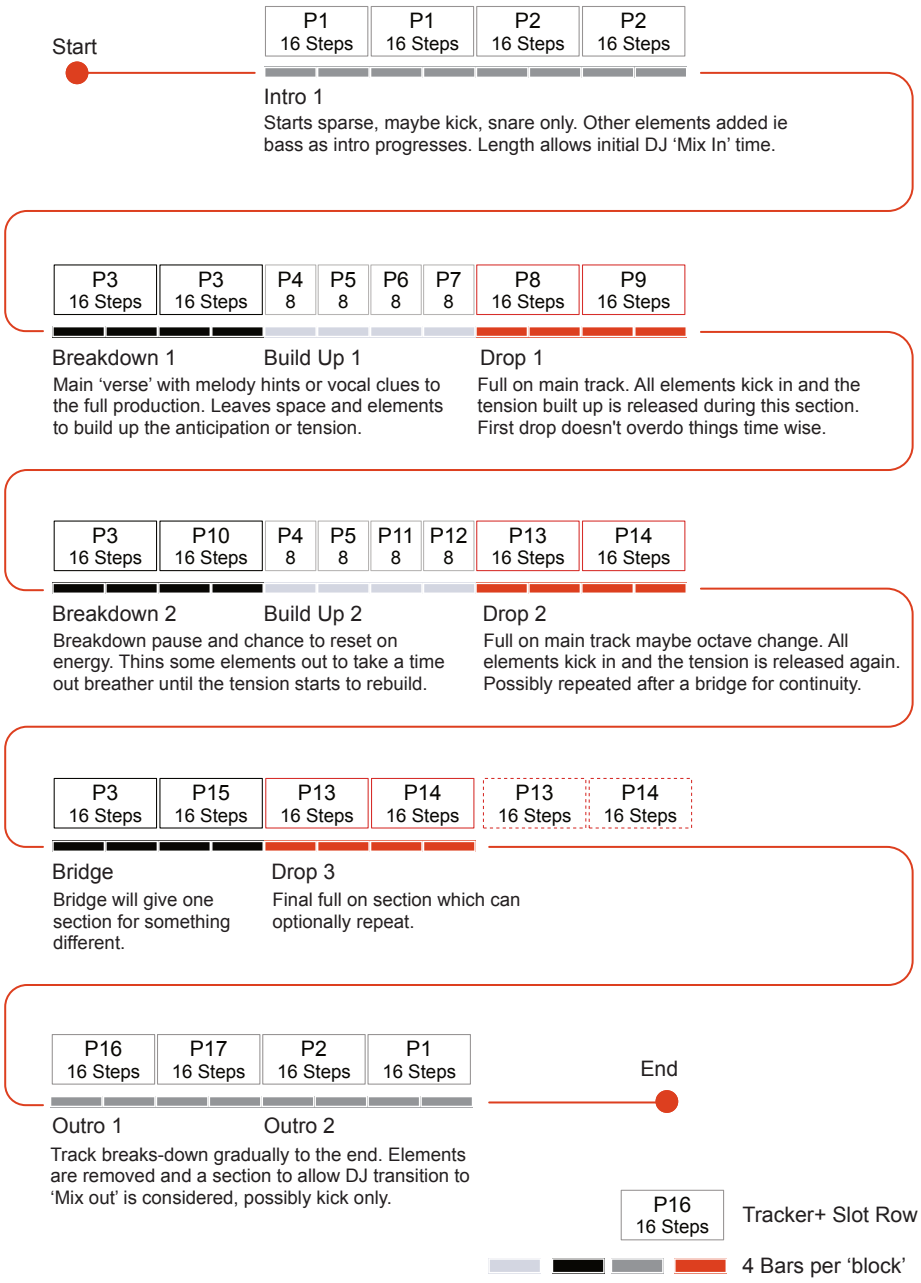
Tempo
Adjusts the project Tempo

NOTES

9.2 Arrangement Overview

An entire song track consists of a number of variations that maintain the listeners interest and define its style and even its genre. Patterns are where the variation in sound, tone, key etc are made and the song mode is where variations in the structure are created. There is no fixed model and creativity comes from how songs are arranged as much as the instruments and melody applied. The example is used for illustration purposes.

Example: A typical EDM song structure + Example Patterns

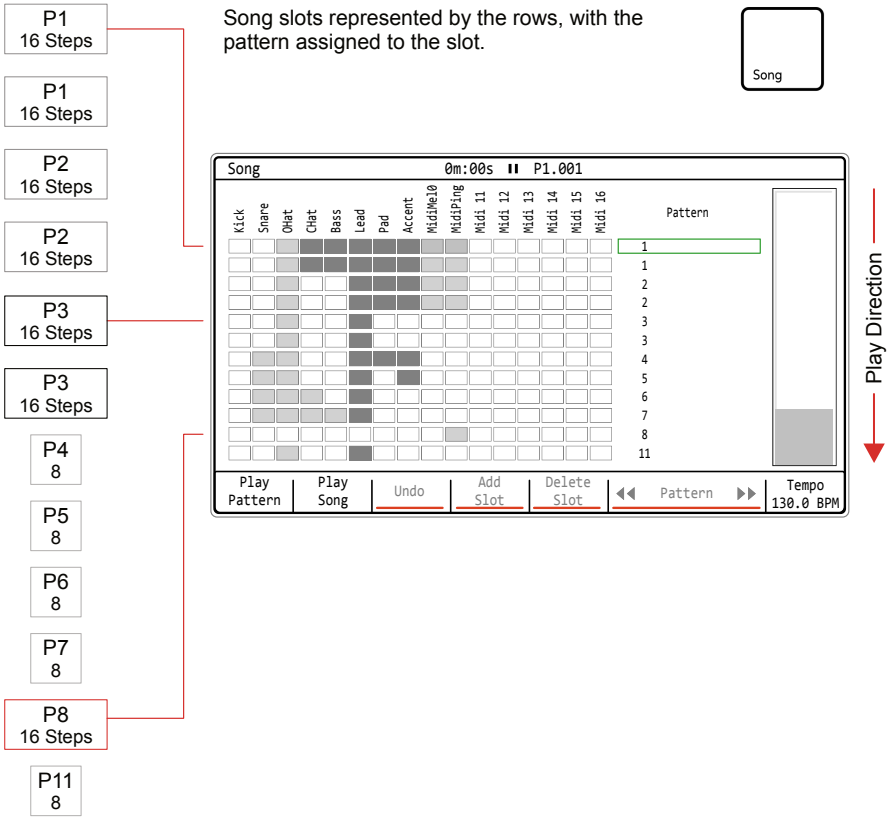


NOTES

The song mode utility will help construct the patterns into a full song arrangement, recognising muted and empty tracks.

In order to use song mode a collection of patterns will be required to select from. Typically this may be newly created patterns or patterns edited as a variation from a base pattern. For example the same pattern can be copied then transposed and parts muted then saved as an alternative version.

Patterns cannot be named in Tracker+ and are managed in the pattern page as Pattern 1, Pattern 2 etc, loaded into the song utility as 1,2 etc and stored on the microSD card as pattern_01.mtp, pattern_02.mtp etc. It is advised to adopt some form of noting each pattern and it's function and features.

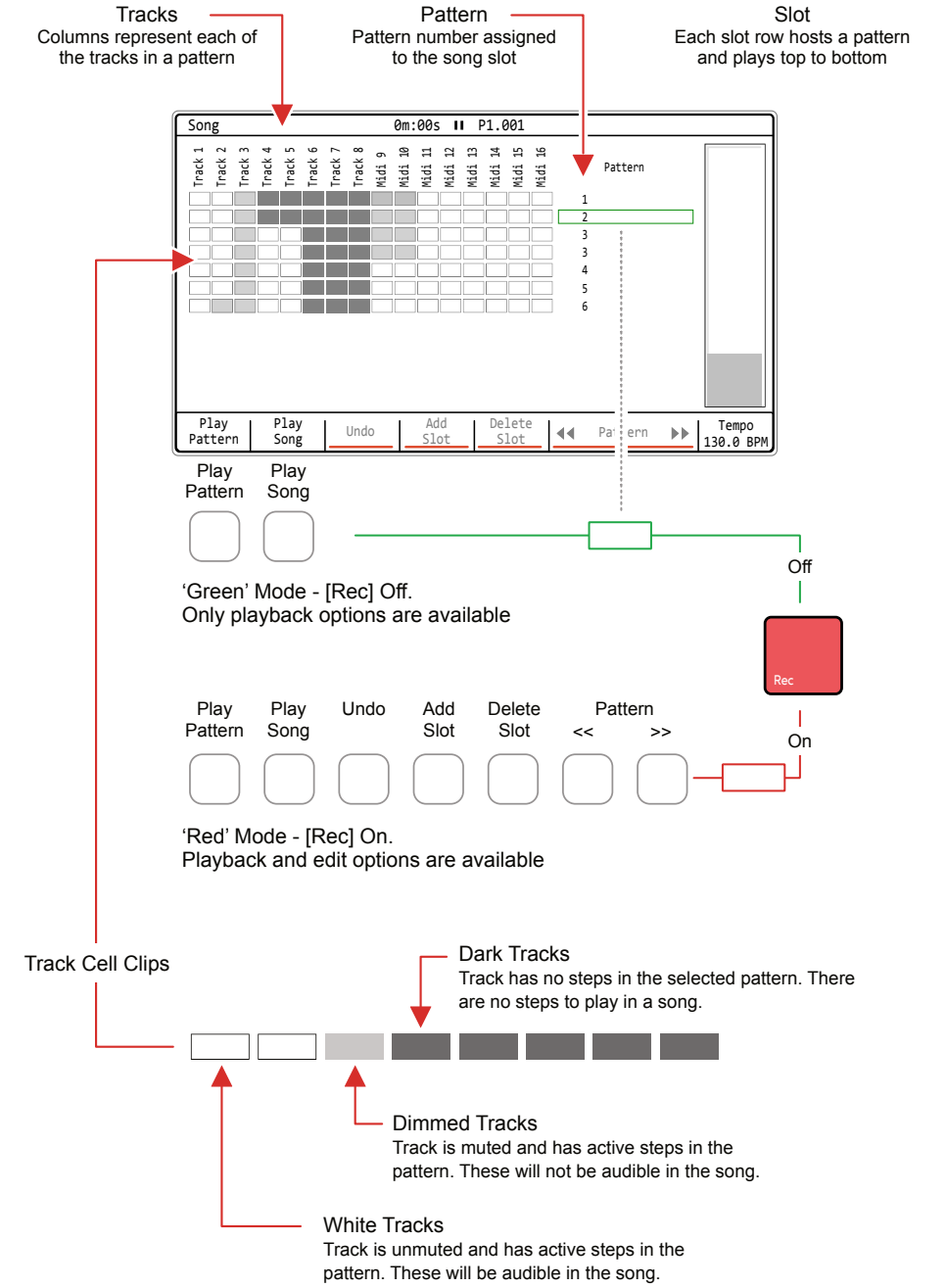


Each project can have 1 song, which can contain a maximum of 255 slots.

NOTES

9.3 Song Mode Interface

Select the song page by pressing [Song] or hold [Song] to temporarily display the page from within another page, reverting back to this page when [Song] is released. The interface for song mode is by default empty other than a single slot 1 with pattern 1. Up to 255 Song slots are available. Pressing [Play] in song mode will play the song not just individual pattern. Tracks in a pattern for the slot are represented as cell clips.



Muting Tracks
Muting is not performed in song mode. Use the Pattern page or the Track Mixer - Master Page 2/3 to mute / unmute.

9.4 Song v Pattern Relationship

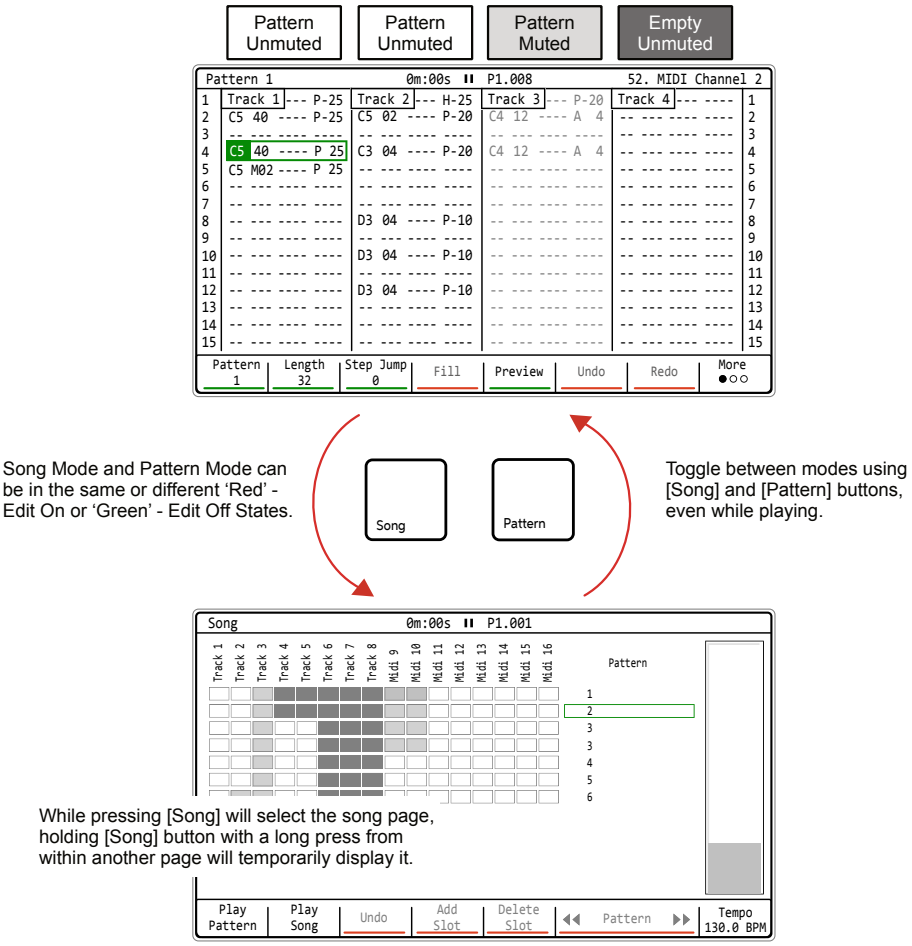
NOTES

Patterns can be arranged into a song in the song mode utility. Patterns selected in a song will also be available in the pattern mode and will appear in song mode as muted / unmuted inline with the status in pattern mode.

Editing tracks in song mode will reflect in pattern mode, tracks can be copied and pasted within song mode which will also be edit the pattern.

Patterns are muted in pattern or master pages and are reflected in the song mode clip shade as are empty clips.Tracks edited in Song Mode will in turn edit and reflect in the actual pattern.

When pressing [Play] in Pattern mode, switching to Song Mode will only show the selected pattern being played.



Patterns in Song Mode will reflect the track condition from the pattern view including mute states, step position etc. This is shown by the shade of the track slot and the header position.

Tracks can be re-ordered by copy / paste in Song Mode. This in turn will edit the actual pattern and as such also be reflected in the pattern view.

When pressing [Play] in Song mode, switching to pattern mode will show each pattern as it is being played in the song structure.

NOTES

9.5 Creating and Editing a Song

The pre-requisite to creating a song is to have a series of patterns available, although technically blank patterns can also be added to a song slot. Editing and creating a song is performed in ‘Red’ mode i.e. when the [Rec] mode is selected as on. Otherwise the song mode page just presents the playback of patterns and the song as options. Track muting is not applied in Song Mode, but is set in the Pattern or Track Mixer Pages.

CREATING A BASIC SONG FROM SCRATCH

1. Press [Song] to select song mode. The step / pattern cursor will be displayed by a green bounding box. Also only [*Play Pattern*] and [*Play Song*] screen buttons are available in ‘green’ mode - [Rec] off.

2. Press [Rec] to toggle editing on, ‘red’ mode. The step / pattern cursor will be displayed by a red bounding box. Also all of the screen button options are shown as available in ‘red’ mode - [Rec] on.

3. Navigate to the slot location desired, Turn (Jog). The location selected is shown with the green or red bounding box over the slot number and pattern number. Alternatively Press [Up] and [Down] to also navigate through the slots. Press [Shift] + [Insert] to jump to the top slot.

4. To add a new song slot, Press [*Add Slot*] screen button. Song slots represent a pattern and are displayed as a row on the song mode page.

5. When adding a new slot row, it will

   - Be added directly below the currently selected row.

   - The newly added slot replicates the previously selected row.

   - The new slot row is also automatically selected.

6. To change the pattern on the selected row, Press the [*Left*] screen button or [*Right*] screen button or hold [Shift] + Turn (Jog). All 255 patterns that are available in a project will be selectable in a song, even if no steps or data has been created in the chosen pattern.

7. More slots can be added to develop the song further and expand its length and duration.

NOTES

Creating a basic song is a starting point, but a number of additional editing features are also available within Song Mode. Individual tracks can also be re-positioned. Be careful when editing patterns as the song structure and patterns are directly linked and edits can affect each other.

BASIC EDITING OF AN EXISTING SONG

1. Press [Song] to select song mode. The slot and pattern selection bounding box may be displayed green. Also only [*Play Pattern*] and [*Play Song*] screen buttons are available in 'green' mode - [Rec] off.

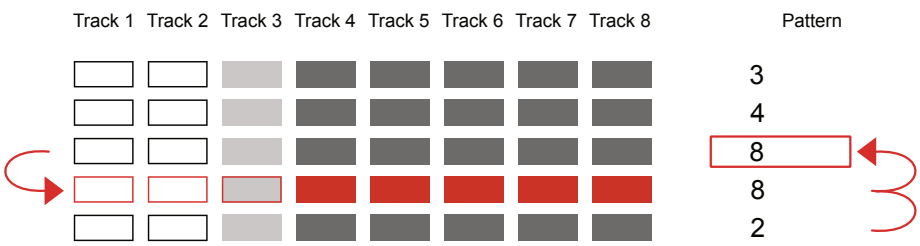
2. Press [Rec] to toggle to editing in 'red' mode. The slot and pattern bounding box will be displayed red. Also all of the screen button options are shown as available in 'red' mode - [Rec] on.

3. Navigate to the slot location desired, Turn (Jog). The location selected is shown with the red bounding box over the slot number and pattern number when editing. Alternatively Press [Up] and [Down] to also navigate through the slots.

4. To delete the currently selected song slot, Press [*Delete Slot*] screen button. The selected song slot is deleted and the other slots will move up the order.

5. Press [*Add Slot*] screen button to add a new song slot row. To add an empty slot, Hold [Shift] + [*Add Empty Slot*] screen button.

6. The undo command does not restore deleted slots so be careful when editing songs.



By default, Adding a slot replicates the current slot on a row below. Also selects the new slot.

Adding an empty slot can be performed by holding shift.

Deleting a slot removes the current slot and moves the below slots up in the order.

NOTES

EDITING TRACK CLIPS IN A SONG

1. Press [Song] to select song mode. The step and pattern cursor will be displayed by a green bounding box. Also only [*Play Pattern*] and [*Play Song*] screen buttons are available in 'green' mode - [Rec] off.

2. Press [Rec] to toggle editing to 'red' mode. The step and pattern cursor will be displayed by a red bounding box. Also, all of the screen button options are shown as available in 'red' mode - [Rec] on.

3. Navigate to the desired track clip. Turn (Jog) to navigate through the slots or Press [Up] or [Down]. Navigate to the Track by pressing [Left] or [Right]. The selection is shown with the red bounding box over the pattern for the track.

4. To select multiple track clips, Press [Shift] + [Left], [Right], [Up] or [Down]. The red bounding box will encompass all of the selected tracks

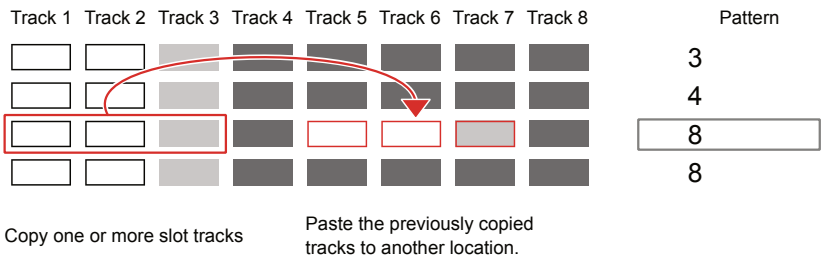
5. To delete selected track clip(s), Press [Delete / Backspace].

6. Press [Copy / Paste] to copy the highlighted and selected track(s).

7. Navigate to the target track clip location. Turn (Jog) to navigate through the slots or Press [Up] or [Down]. Navigate to the Track by pressing [Left] or [Right]. The selection is shown with the red bounding box over the pattern for the track.

8. Press [Shift] + [Copy / Paste] to paste the previously copied selection into the location selected. When pasting multiple tracks the highlighted track location will represent the top left corner of the copied selection of tracks and as such will paste into the adjacent track locations.

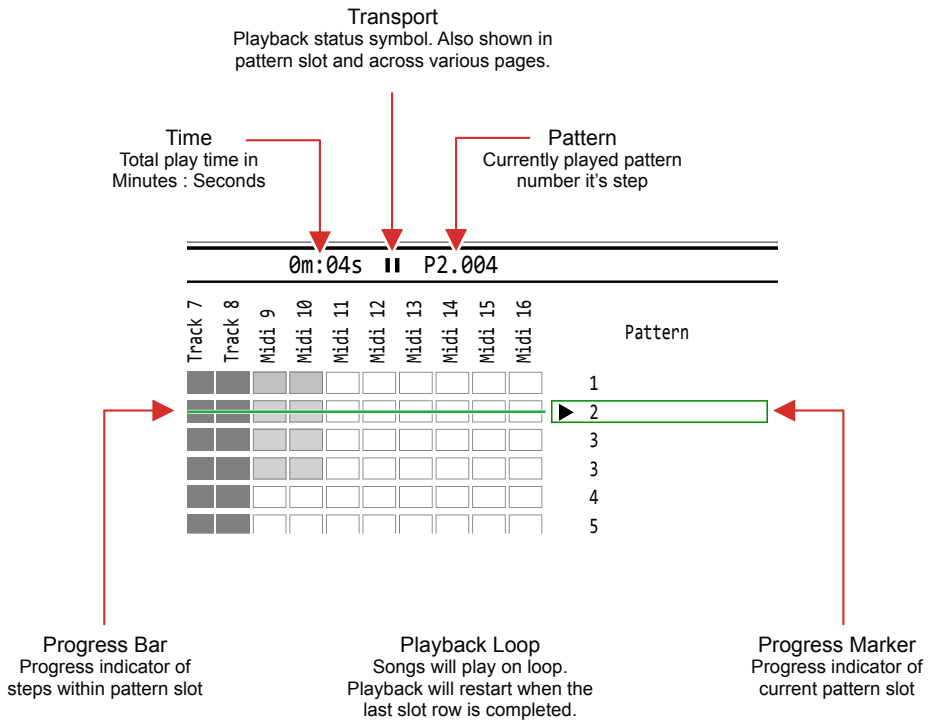
9. The copy / paste edits in song mode will also be performed automatically in the pattern itself and reflected back into the same pattern in other slots. Switching to pattern mode will view any edits made. Care must be taken to remember that the song mode and pattern mode are directly linked. Previous edits can be restored by pressing [*Undo*] screen button.



9.6 Playing Songs and Patterns

NOTES

Playing songs within song mode performs differently to playing patterns in the pattern view. It is however also possible to play only patterns from within Song mode. The dedicated play button will play a song in song mode and will play the pattern only when in pattern mode.



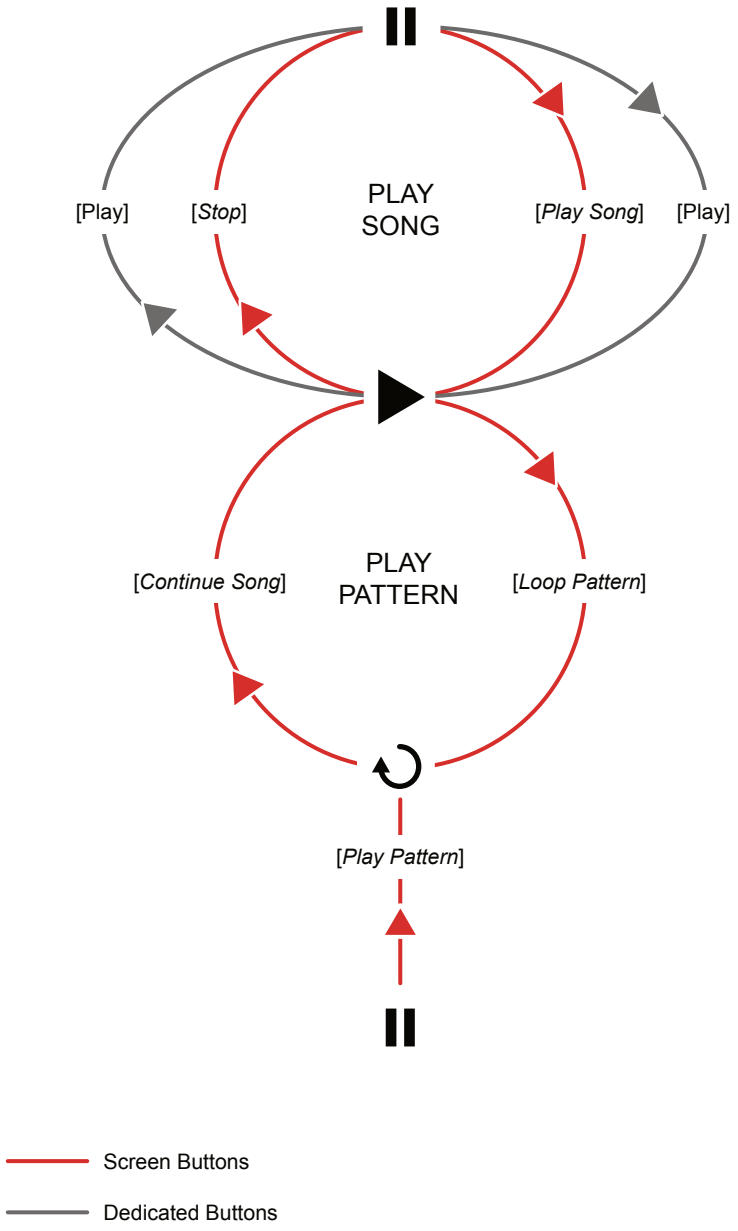
Song Playback Options

Mode	Symbol	Screen Button	State	Button	Description
Song	▶	[*Play Song*]	Play Song	Play	Will play the song. Changing to pattern mode will play and display patterns in sync with song. Same as pressing [Play]
Song	❚❚	[*Stop*]	Pause		When playing, button will toggle pause. Press again to commence from the start of the paused pattern. Same as pressing [Play]
Song to Pattern	↻	[*Play Pattern*]	Play Pattern	Shift + Play	Play the currently selected pattern in a loop. Same as pressing [Shift] + [Play]
Pattern to Song	▶	[*Continue Song*]	Play Song		Switches from playing pattern to play song from current position. Same as pressing [Shift] + [Play]
Song to Pattern	↻	[*Loop Pattern*]	Loop Pattern		Switches from playing song to play and loop pattern from current position. Same as pressing [Shift] + [Play]

NOTES

Playback Behaviour.

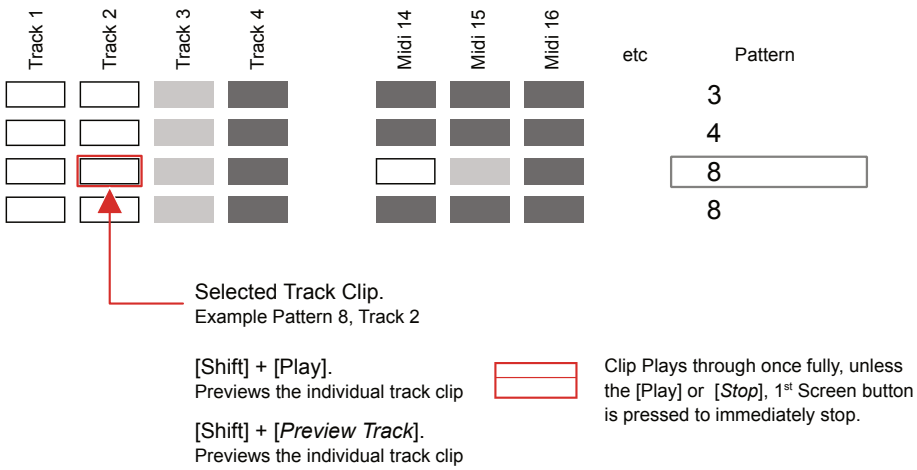
Playing a song in song mode can be performed from the dedicated play button or the screen buttons. Songs will play in loop meaning the song will continue to play from the start after the last slot row is completed. Patterns can also be played and looped from song mode. Switching between pattern and song playback is possible using the screen buttons , which change function to reflect the current status.



NOTES

Previewing Tracks in Song Mode

While songs and patterns can be played from within song mode, the ability to preview only individual track clips is possible. This can only be performed in ‘Red’ [Rec] Mode and with an individual track clip selected.



PREVIEWING A SONG TRACK CLIP

1. Press [Song] to select song mode.

2. Press [Rec] to toggle to editing in ‘red’ mode. The slot and pattern bounding box will be displayed red. Also all of the screen button options are shown as available in ‘red’ mode - [Rec] on.

3. Navigate to the track clip location desired, Press [Left], [Right], [Up] and [Down] to also navigate through the slots. Select a single track clip. Multiple selections cannot be previewed.

4. With the track clip selected and highlighted red, Press [Shift] + [Play]. The clip will play once fully or press [Play] to stop playback.

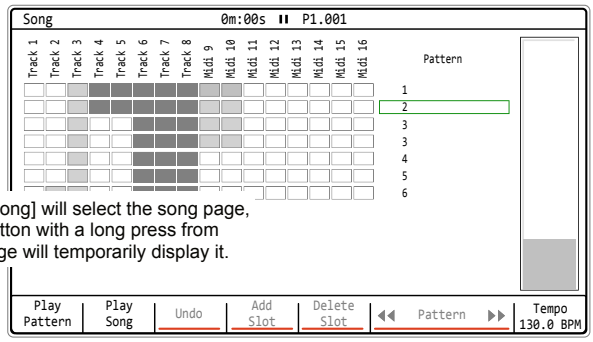
5. Alternatively, with the track clip selected and highlighted red, Press [Shift] + [*Preview Track*] screen button. The clip will play once fully or press [*Stop*] screen button, to stop playback.

NOTES

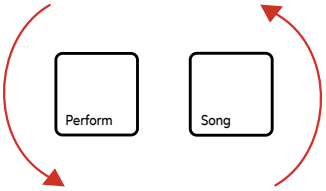
9.7 Link between Song and Performance Mode

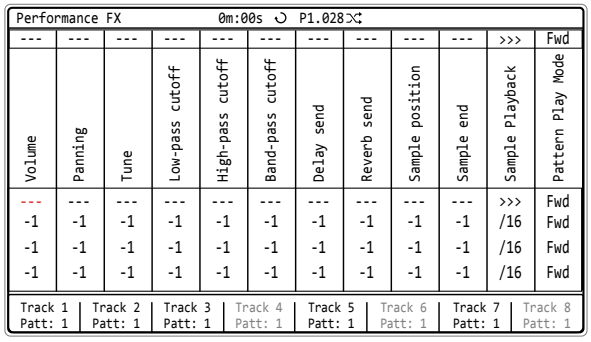
Songs and patterns are integrated and linked to work together. In addition songs work in conjunction with Performance Mode. Performance mode allows live performances and improvisations. Perform is covered in detail in a later section.

Songs can be played in Song Mode which will play through all slots and the patterns assigned. When switching to performance mode the song will continue playing.



While pressing [Song] will select the song page, holding [Song] button with a long press from within another page will temporarily display it.





Press [Play] in Performance Mode to play the current pattern as set in the pattern page or set in song mode, whichever is the most current pattern selected. Press [Shift] + [Play] in Performance Mode to play the full song.

The 'Random' symbol in the header of a page will demonstrate that tracks from various patterns can be selected for mixing in performance mode.

10

Master Effects

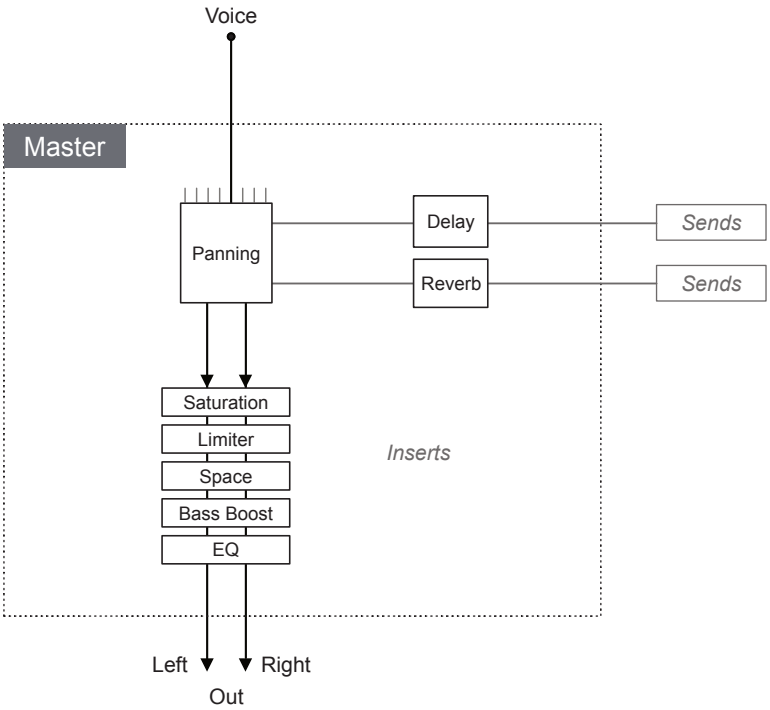
A number of effects are available in Tracker+. Some can be set in the FX1 and FX2 slots and some used in Performance Mode. Also the instrument parameters give access to instrument level effects. This section covers the Master Effects. These are the common effects that are available in the main audio chain and are located in the master page. Effects in the primary audio chain are called insert effects. Effects are not available on an individual track basis so all tracks are routed through the master section. The track mixer is also a page in the master section. An example of an insert effect is the EQ effect. Send effects allow variable amounts of audio to be channelled in parallel to the main mix to the effect. Essentially these are the reverb and delay effects. The main reverb and delay effect settings are accessible from the master page and the send amounts in the global mixer. The three pages including the main mix page, track mixer page and global mixer functions are available by pressing the [Master] button. Sub pages are contained within, or parameters are available directly from the master page. The master effects have a number of parameters and defined functions. It is always worth remembering that adjustment by ear is usually a more appropriate method when adjusting effect settings. While theoretical numbers and applications are good starting points, there is no better method than to hear how the sound is affected by adjustments as they are applied.

10 Master Effects

10.1 Effects Overview

NOTES

Tracker+ has 8 voices which would represent each of the tracks playback. The common processing of the voices comes together at the master stage where the voices are mixed and the master effects applied. Also the Delay and Reverb 'send' audio is mixed into the main out.



The diagram shown is for illustration purposes and does not constitute an exact or official schematic of Polyend's Tracker+ circuitry. It does however serve to give an insight into the signal path and identify the six master effects covered in this section.

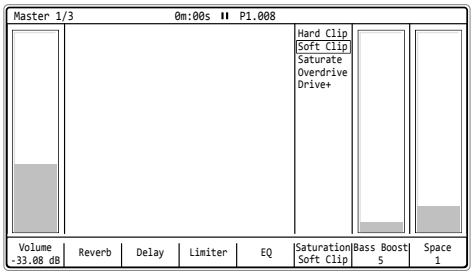
The reverb and delay send effects can be sent pre-fader or post-fader in the global mixer. This is set in the 'Config' settings. This means the effect is sent before the volume fader or after the volume fader adjustment.

NOTES

10.2 Master Pages

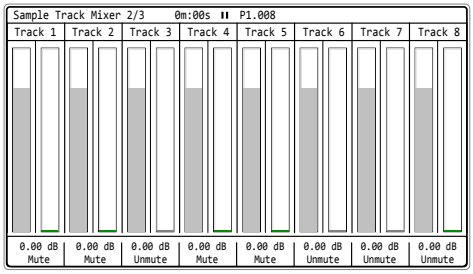
The 6 master effects are located in the master section of Tracker+. This is accessible with the [Master] dedicated button which opens to 3 mixer / master pages. The main effects settings are contained within this pages.

Press [Master] to select the Master section.
Each Press of [Master] will cycle through 3 master pages:
Master, Page 1; Sample Track Mixer, Page 2; Global Mixer, Page 3.



Master - Page 1/3

Gives access to the master output level volume level. Access to the settings pages for the Limiter and EQ are available from the screen buttons. The Saturation, Bass Boost and Space effects have one parameter each and are directly adjustable when selected with (Jog). The two send effect parameter pages are also accessible when using the respective screen buttons.

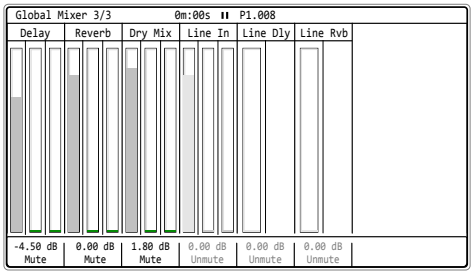


Sample Track Mixer - Page 2/3

Gives access to the individual sample track levels to allow mixing of the entire song. Hold one or more screen buttons and turn (Jog) to adjust.

Mute and Solo can be set here as well as editing the track names when [Rec] is active.

No effects are provided from this page.



Global Mixer - Page 3/3

The main output delay and reverb sends are visible and can be adjusted. The main dry and wet mix of the audio and effects is also provided. Control for pass through of line inputs. Reverb and delay can be applied to this audio signal. Pre-fader or post-fader are in the configurable in the 'Config' settings.

All settings accessible with the screen buttons

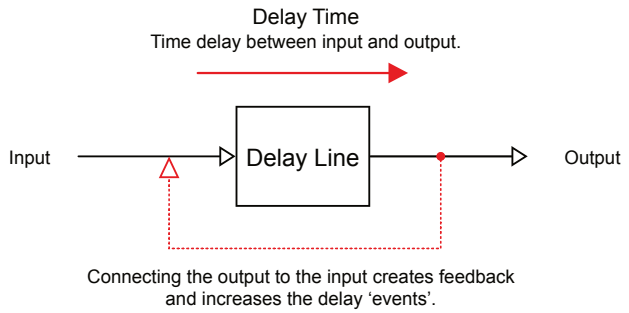
To adjust effect parameters, select the page then use the screen buttons or use [Left] or [Right] to select the parameter. Screen buttons select pages such as delay, reverb etc. Turn (Jog) or Press [Up] or [Down] to change the selected parameter value. Multiple track mixer levels can be adjusted when holding the screen buttons simultaneously.

10.3 Master Delay

NOTES

Delay is one of the two send effects. A send effect basically routes an adjustable amount of audio in parallel to its main signal path and is sent to a common audio effect. In this case delay. This delay affected audio is then returned back to the main audio path. The effect itself is a common function, managing several send / return signals. Any delay parameter adjustments will therefore also affect other send signals. The 'Send / Return' configuration is a common application for delay effects.

What is a delay effect?



A delay is a common production effect used to delay an incoming signal to the output. While this is a simple principle there are many effects that use delay as a foundation. Some examples are echo (creating defined repeats) and chorus (short delay taps to give a thicker rather than echo style feel) as well as delay types such as ping-pong delay spreading the delay points across the stereo field left to right and slap-back delay emulating old tape delays which are used successfully to thicken vocals.

Delay is a time based effect and synchronisation (or not) with the track tempo should also be considered depending on the output required.

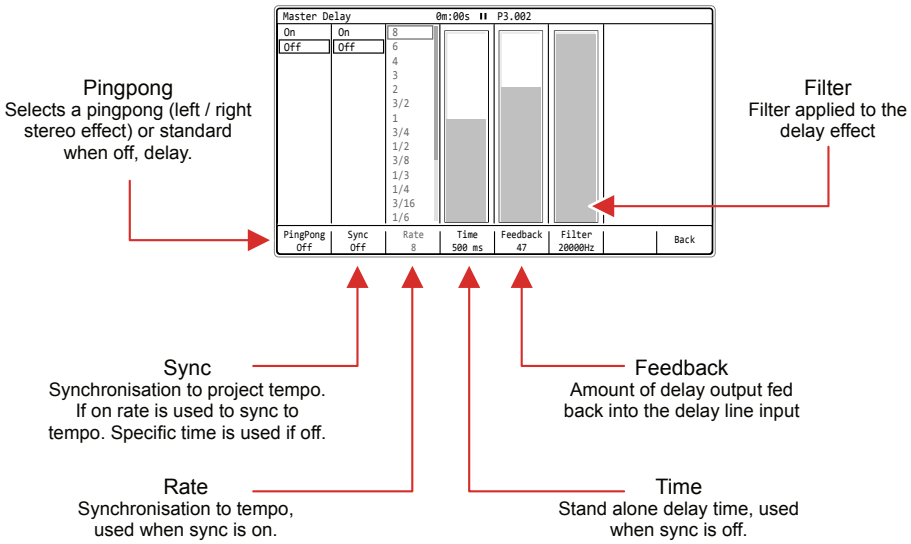
ACCESSING MASTER DELAY PARAMETERS

1. Press [Master] to select master section. Press again if needed, until the 'Master' Page 1 of 3 is displayed.
2. Press [*Delay*] screen button.
3. The six delay parameters are presented on the master delay page.
4. Press [*Back*] screen button to return to the master page.

NOTES

Master Delay Page

Accessed via the Master page 1 of 3 and selected from the screen buttons.



Master Delay Settings.

Option	Range	Description
Pingpong	On, Off	Toggles the pingpong mode on or off. This will set the delays to be generated across the stereo field left to right
Sync	On, Off	Toggles synchronisation to the project tempo on or off. When on, the rate with respect to tempo is used for the delay. When off, the time parameter is used.
Rate	See Rate Table	The rate divider / multiplier, synchronised to project tempo, used for the delay time. Available when sync is set to on.
Time	1 - 3500ms	The time used for the delay. Only available when sync is set to off.
Feedback	0-99	Amount of delay output signal that is fed back into the delay input. This parameter is what increases the number of delays in the audio.
Filter	100Hz - 20000Hz	Applies a filter to the delay and helps shape the sound more appropriately.

Rate Options

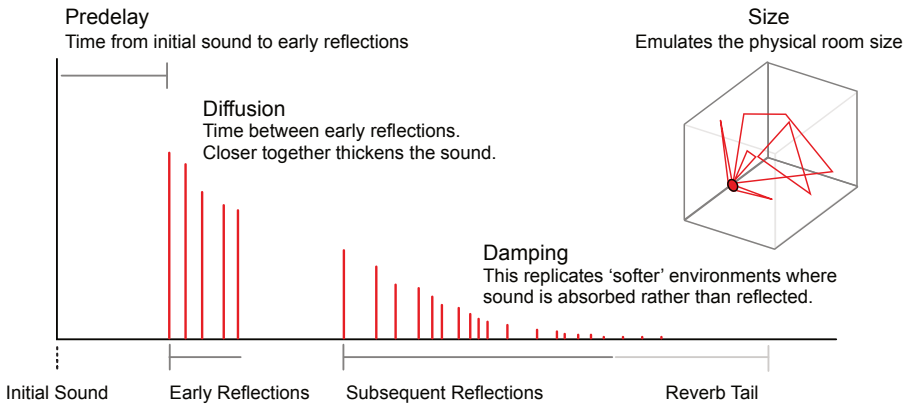
8	6	4	3	2	3/2	1	3/4	1/2	3/8
1/3	1/4	3/16	1/6	1/8	1/12	1/16	1/24	1/32	

10.4 Master Reverb

NOTES

Reverb is the second of the send effects. As stated a send effect routes an adjustable amount of audio in parallel to its main signal path and is sent to a common audio effect. In this case reverb. This reverb affected audio is then returned back to the main audio path. The effect itself is a common function, managing several send / return signals. Any reverb parameter adjustments will therefore also affect other send signals. The 'Send / Return' configuration is a common application for reverb effects.

What is a reverb effect?



A reverb is a common production effect used to replicate the audio behaviour of spaces. A normal space such as a small or large room will reflect audio differently. Think of how the sound reflects in a large cathedral compared to a small bathroom. The sound will bounce and reflect between the walls and other elements in the room. These reflections arrive at the human ear at different times and different levels. Reverb is an effect that replicates this behaviour.

Reverb parameters mainly focuses on the space / room characteristics.

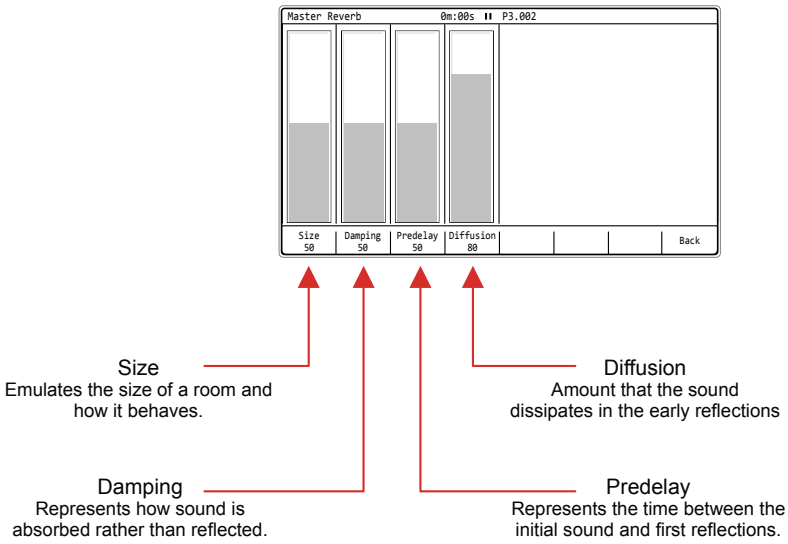
ACCESSING MASTER REVERB PARAMETERS

1. Press [Master] to select master section. Press again if needed until the 'Master' Page 1 of 3 is displayed.
2. Press [*Reverb*] screen button.
3. The four reverb parameters are presented on the master reverb page.
4. Press [*Back*] screen button to return to the master page.

NOTES

Master Reverb Page

Accessed via the Master page 1 of 3 and selected from the screen buttons.



Master Reverb Settings.

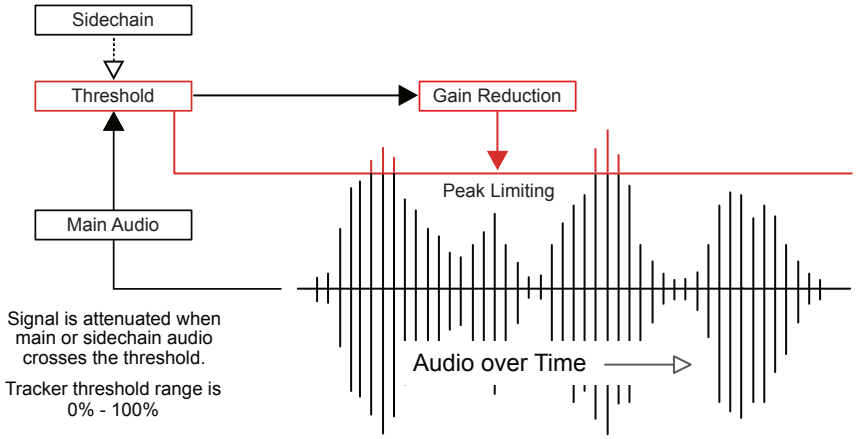
Option	Range	Description
Size	0-100	Replicates a physical room size.
Damping	0-100	Sound is reflected with walls, furniture and fittings etc. However it is also absorbed into walls and materials. This emulates the absorbent part of sound in a space.
Predelay	0-100	The time from the initial original sound being triggered to the first reflections being heard.
Diffusion	0-100	Diffusion emulates how much sound is dissipated. Essentially this is based on the time period between the early reflections. The wider, the thinner the reverb effect.

10.5 Limiter

NOTES

Tracker+ limiter operates as the first insert effect in the master effect chain. This is not a typical configuration as most applications have a limiter as the last effect in a chain. Insert effects in Tracker+ route the entire, main audio signal prior to the output.

What is a limiter?



A limiter is normally used at the end of an audio chain and is used to protect the digital integrity by taming signals beyond a threshold, keeping levels within a defined limit and usually avoid digital clipping. Limiters are useful to develop a sounds level and increase the perceived loudness.

Tracker+ limiter also has a sidechain function. The Limiter threshold is based on the main audio (sidechain off). Sidechain options will route an alternative audio signal to trigger the gain reduction instead of the main audio. This can be used creatively and triggered by a track or an external audio signal

ACCESSING MASTER LIMITER PARAMETERS

1. Press [Master] to select master section. Press again if needed until the 'Master' Page 1 of 3 is displayed.

2. Press [*Limiter*] screen button.

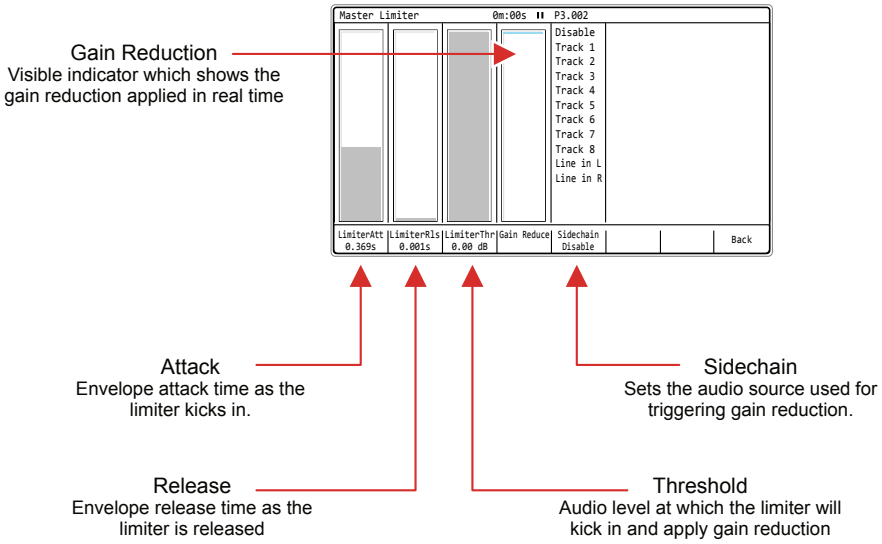
3. The five limiter parameters are presented on the master limiter page.

4. Press [*Back*] screen button to return to the master page.

NOTES

Master Limiter Page

Accessed via the Master page 1 of 3 and selected from the screen buttons. The behaviour of the limiter as extreme or subtle can be set in the 'Config' menu options.



Master Limiter Settings.

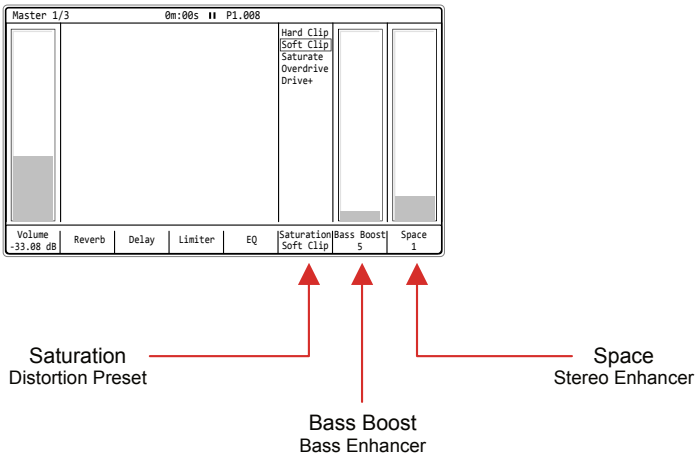
Option	Range	Description
Limiter Att	0.001 - 1.000s	Envelope attack time which controls the limiter behaviour as the limiter kicks in.
Limiter Rls	0.001 - 1.000s	Envelope release time which controls the limiter behaviour as the limiter drops out.
Limiter Thr	-Inf dB to 0dB	The threshold level at which gain reduction and hence limiting is applied. Source is based on the audio source - Main or Sidechain.
Gain Reduce		Visual, real time indicator of gain reduction being applied. Does not offer any parameter settings - indication only.
Sidechain	Disable, Track 1-8, Line In L R	Selects the audio signal used to trigger limiting. The normal state is disabled which uses the main audio. Alternatively individual tracks or line in L or R can be selected.

Setting a limiter is an iterative process. Set up the source and fast attack and release then make small incremental adjustments while playing the song, starting with threshold. Once an appropriate gain reduction is reached tweak the attack and gain to further shape the sound.

10.6 Saturation, Space & Bass Boost

NOTES

Saturation, Space and Bass Boost are simple effects each carrying one parameter that adjusts the amount of effect applied into the main audio out or in the case of saturation, sets the defined preset.



Saturation is the first effect in the entire master chain. This is selects from 5 preset options for subtle distortion. The space option, ranges 0-8 and is a widener enhancing the stereo image. Bass boost has a 0-100% range with represents approx 0-5 dB. This enhances the bass frequencies around 80 Hz, which can be subtle on some material. Both will be applied based on taste so try tweaking and adjusting on different songs to find the sweet spot for the material and track.

ADJUSTING THE BASS BOOST / SPACE PARAMETERS

1. Press [Master] to select master section. Press again if needed until the 'Master' Page 1 of 3 is displayed.

2. To select the effect:-

   - Press [Saturation] screen button
   - Press [*Bass Boost*] screen button
   - Press [*Space*] screen button
   - The (Left) or (Right) buttons also navigate and select.

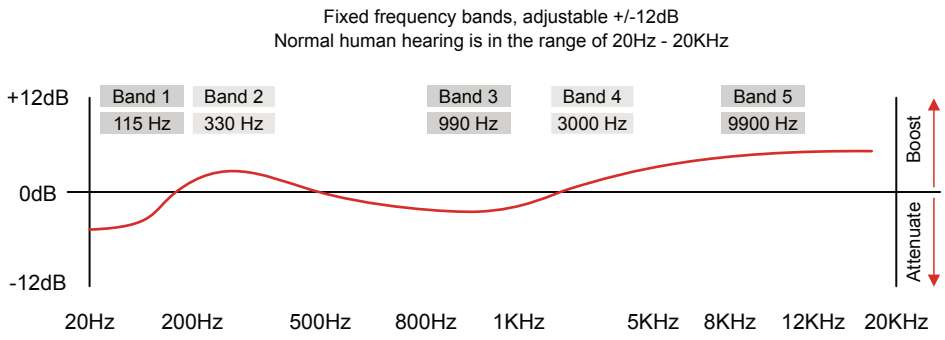
3. Turn (Jog) or Press [Up] or [Down] to adjust the setting.

NOTES

10.7 EQ

Equalization, also called EQ, is an effect which allows the adjustment of specific frequency bands to shape the sound spectrum. This can adjust the tone and have an audible creative effect for sound design.

What is a EQ?



An EQ is set up with a number of frequency bands. Many models have adjustable frequency, width of band and the ability to boost or attenuate at the given frequency. Tracker's EQ is the last master effect in the chain and has 5 fixed frequency bands.

The adjustment is based on a dB Boost or Attenuation with a range of -12dB to +12dB. A setting of 0.00dB across the range mans no EQ is applied and the audio will be unaffected.

A normal human hearing range is 20Hz to 20kHz. This is the range an EQ therefore operates with specific ranges affecting sound elements. Some examples are:-

- Vocal sibilance occurs around 3-7kHz. Try cutting at 3kHz or 9.9kHz to de-ess and remove any stand out 'S' elements.
- Mic rumble can be removed around 70-150Hz.
- Boost around 9kHz to give a sound more 'air' and brilliance.
- A cut at 1kHz can help vocals by removing 'honkiness'
- Cut at 300Hz to remove muddiness
- Boost at 115Hz to add warmth.

NOTES

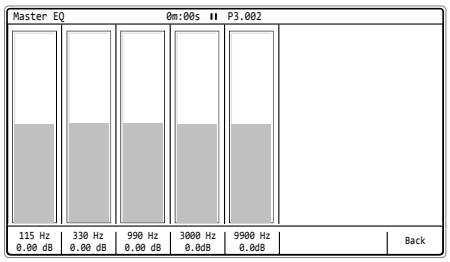
ACCESSING MASTER EQ PARAMETERS

1. Press [Master] to select master section. Press again until the ‘Master’ Page 1 of 3 is displayed.

2. Press [*EQ*] screen button.

3. The five EQ parameters are presented on the master EQ page.

4. Press [*Back*] screen button to return to the master page.



NOTES

10.8 Effect Config Options

Several options can be set in the 'Config' menu for master effects. The behaviour of the limiter can be changed between extreme and subtle. Also the master mix reverb and delay can be configured to send before / pre the volume level fader of after / post fader.

SETTING THE CONFIG OPTIONS FOR MASTER EFFECTS

1. Press [Config] to open the configuration menu.
2. In the first column, select 'Project Settings'. Use the 1st and 2nd Screen button to navigate. Alternatively use [Left] or [Right] to navigate menus and Turn (Jog) or [Up] or [Down] to select a function.
3. In the 'Project Settings' Sub menu the 'Limiter mode' and the 'Sends mode' can be adjusted. Select from the central sub-menu with the 4th or 5th Screen button.
4. The Limiter options are:
   - Subtle: Will affect how aggressive the envelope attack and release operates. Subtle will give a gentle, transparent style and will be slow in catching fast transients.
   - Extreme: Will provide a more aggressive model. Will catch all of the transients but will also affect the sound adding colour.
5. The Send effects:
   - Pre-fader: Will send the audio to the effect irrespective of the instrument volume. The effected signal will be louder.
   - Post-fader: Will send the audio after it has been adjusted by the instrument volume and therefore ensures the effect is more proportionally consistent with the level, especially when modulated
6. Press [*Change*] screen button to change the option.
7. Navigate with the 4th or 5th Screen button and press [*Apply*] screen button to accept the option.

11

MIDI

While working with audio has been covered extensively, Tracker+ also has a set of comprehensive MIDI features. MIDI is the protocol which allows devices to communicate together, for example where one device controls sequencing to send to another synth. A lot of the processes and instructions for audio also apply to MIDI, so for example steps in a pattern can be set to send MIDI rather than trigger an audio sample instrument. MIDI configuration of steps is handled just like an instrument. Tracker+ therefore can control external gear from its sequencer. In addition external gear can also be set up to control Tracker+. A few fundamental things should be considered when working with MIDI. The clock in a multi gear setup will control timing between devices. As such only one main clock should be declared. Also the transport of which device will stop and start the sequencing. These of course are design choices taken when organising a collection of equipment to work together with MIDI and should be considered at the outset. MIDI in Tracker+ can be set up through the USB connection or the MIDI interface which uses an adapter cable to convert the 3.5mm connection to standard 5-Pin DIN style MIDI connections. MIDI expands the landscape of sound design when using Tracker+ in a setup. Audio, controlled by tracker from external devices can also be sampled back into Tracker+, making it a perfect fit for the centre piece of a setup.

11 MIDI

11.1 MIDI Definitions

NOTES

To clarify some of the terminology and technology around MIDI with respect to Tracker+ a summary of key definitions is provided. Tracker+ uses a TRS to Type B MIDI Adapter. Also MIDI over USB is possible.

5 PIN MIDI

5 PIN to TRS MIDI

MIDI DIN 24

This is often found for MIDI Out and Thru and enables syncing of classic devices. This uses 0v & 5v messages as sync signals at 24 pulses per quarter note (PPQN). Tracker+ uses 192 PPQN Internally and can also transmit and receive via USB.

MIDI DIN 48

This is often found for MIDI Out and Thru and enables syncing of classic devices. This uses 0v & 5v messages as sync signals at 48 pulses per quarter note (PPQN). Tracker+ uses 192 PPQN Internally and can also transmit and receive via USB.

MIDI

Musical Instrument Digital Interface. A protocol for communicating between electronic musical gear. Never connect MIDI gear to incompatible DIN signals. Tracker+ has USB MIDI but also an interface for 5 Pin DIN In and out.

MIDI CC

MIDI Control and Note change messages are used to communicate messages across MIDI with values of 0-127. Control Changes (CC) affect parameter values while note data triggers notes. Tracker+ has some defined CC Assignments.

MSB & LSB

Most Significant Byte and Least Significant Byte. MSB provides the 128 data resolution which is ok for most MIDI applications. More advanced devices use MSB and LSB values increasing resolution to 16,384 steps.

MIDI STANDARDS

While there are MIDI standards defined, many synth developers interpret this in slightly different ways. Its always worth reviewing the documentation with each to fully understand each device level implementation.

NRPN

Non-Registered Parameter Number is part of the MIDI standard. CC and NRPN are technically very similar but NRPN is less well defined in the standards. NRPN uses more data and can give better control.

SYSEX

System Exclusive. This is an expansion of the normal MIDI communications set up and is typically used for transferring data such as back ups, patches, presets and firmware updates to and from devices.

SDS

Sample Dump Standard. This is an older transfer protocol used for transferring data to and from devices. This is rarely seen nowadays.

The term ‘primary lead’ will refer, in this guide to a device that has the main control responsibility. For example controls the clock and transport and is the central lead. A device which will be controlled by, and follow the primary lead device and which will be subservient by responding to the main control messages will be called a ‘secondary follower’.

NOTES

11.2 MIDI Configuration

A pre-requisite to working with MIDI is to ensure that the configuration settings in the [Config] menu are applied for the desired MIDI gear setup. These will dictate if Tracker+ leads on functions like clock and transport or if it acts as a secondary follower, responding to control and synchronisation from another primary device control. Also Note and CC behaviour is set.

Menu	Option	Description
MIDI	Clock In	Sets the Tracker+ clock between the internal generated clock (default) or an external clock received through the USB or MIDI In jack.
MIDI	Clock Out	Sends the Tracker+ clock output to other devices. Off, USB, MIDI Out jack or USB+MIDI jack options.
MIDI	Transport In	Sets the source of transport control commands, Internal (default), or control from an external device received through the USB or MIDI In jack.
MIDI	Transport Out	Sends Tracker+ transport control commands to other devices. Set to Off, USB, MIDI Out jack or USB+MIDI jack options.
MIDI	Notes In	Sets the input of how notes are received from an external device. Set to Off, USB, MIDI In jack or USB+MIDI jack options.
MIDI	Notes Input Channel	Sets the MIDI channel for external note inputs. Select All channels or Ch 1-16.
MIDI	MIDI Out	Sets the output routing of MIDI to communicate to other devices. Set to Off, USB, MIDI Out jack or USB+MIDI jack options.
MIDI	CC In	Defines how the CC (control change) input from external devices is handled. Set to Off, USB, MIDI In jack, USB+MIDI In jack.
MIDI	CC In channel	Sets the MIDI channel that is used to receive CC (control change) messages. Select All channels or Ch 1-16.
MIDI	Middle C	Sets Tracker+'s middle C as C-3, C-4, C-5, C-6. This will calibrate the note ranges to external gear if this does not naturally match.
MIDI	Clock Sync Correction	Latency compensation for incoming clock synchronisation. Options range from -50 to +50 with each unit = 1/250 of pattern step. Leave at the default 0.0 unless there are synchronisation errors.

Velocity can be recorded from an external MIDI controller, but this must be set in the recording options.

Menu	Option	Description
Project	Recording Options	This option sets the recording options for the project. To record velocity from an external controller one of the velocity inclusive options should be selected.

NOTES

The settings in the config menu will depend on:-

- How the devices are connected together? Are the devices connected by USB? Which will transmit and receive MIDI with the MIDI 5 Pin connection using the MIDI Jack adapter?
- Which device will be a primary leader (main controller e.g. main clock) or a secondary follower (will respond to other gear as the lead control e.g. synchronised to another clock)?
- Will MIDI note data (melodies, chords, etc) be communicated?
- Will MIDI CC control change data be communicated (to change parameters like delay level or trigger performance effects)?

ACCESSING THE MIDI CONFIG OPTIONS

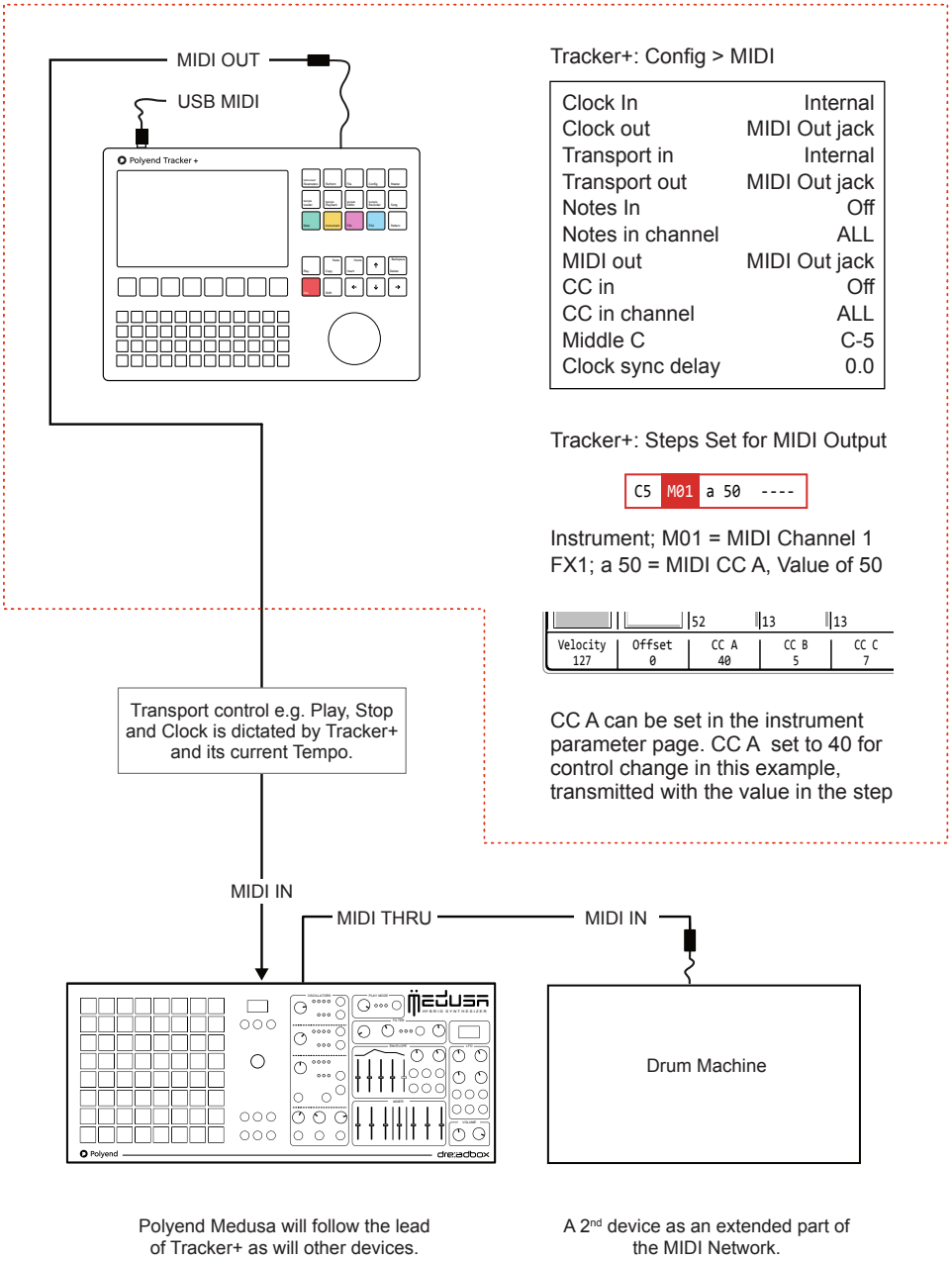
1. Press [Config] to open the configuration menu.
2. In the first column, select 'MIDI'. Use the 1st and 2nd Screen button to navigate. Alternatively use [Left] or [Right] to navigate menus and Turn (Jog) or [Up] or [Down] to select a function.
3. The 'MIDI' Options will be available in the central menu window. Use the 4th and 5th Screen button to navigate. Alternatively use [Left] or [Right] to navigate menus and Turn (Jog) or [Up] or [Down] to select a function.
4. Press [*Enter*] screen button to edit the option that is highlighted.
5. Use the 4th and 5th Screen button to navigate to the desired parameter setting. Alternatively use [Left] or [Right] to navigate menus and Turn (Jog) or [Up] or [Down] to select a function.
6. Press [*Apply*] screen button to confirm the option that is highlighted.

NOTES

11.3 Typical MIDI Configurations

There are many configurations that can be set up with MIDI gear. Some are complex and involve multiple devices while a simple set up can have two devices communicating. Some typical examples are shown.

Example Configuration 1: Tracker+ as the primary lead.



Polyend Medusa will follow the lead of Tracker+ as will other devices.

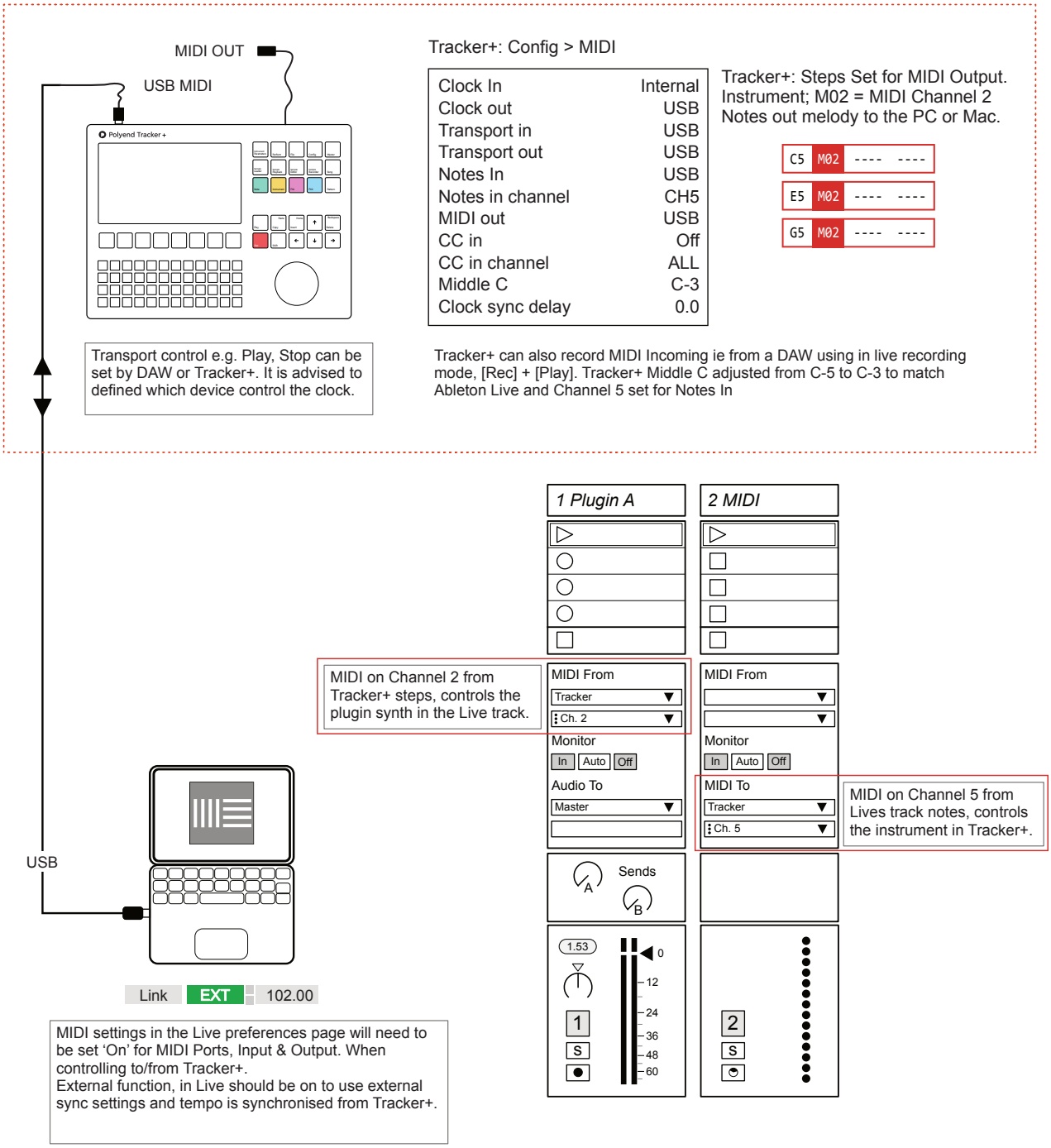
A 2nd device as an extended part of the MIDI Network.

Devices should be configured to receive clock and transport and the MIDI Channel which Tracker+ communicates, for example, Channel 1. CC 40 In Medusa represents the Filter Cutoff frequency in this example each step in Tracker+ will set the filter cutoff.

11 MIDI

The ability to connect to a PC or Mac via a MIDI connection is possible, which can allow software synths and plug-ins to be controlled by Tracker+. Tracker+ will need a hub or will need to be powered by the PC / Mac as the USB connection is the source of power for Tracker+.

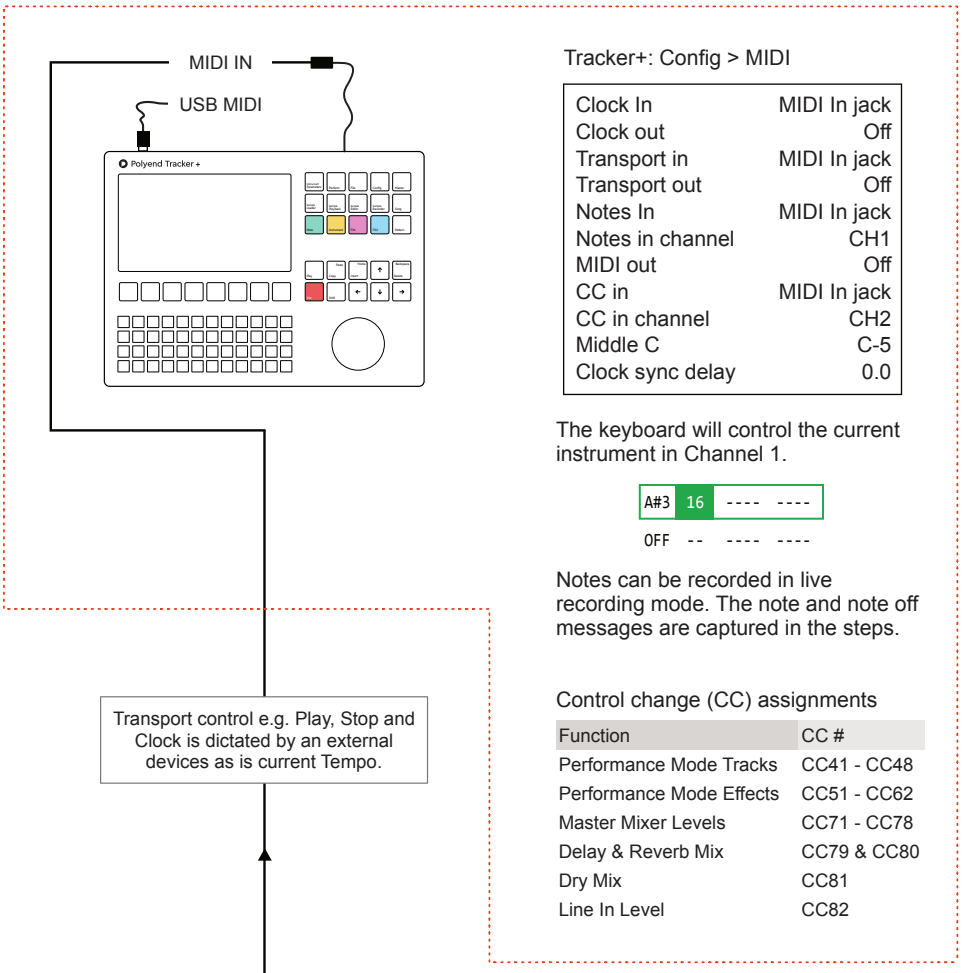
Example Configuration 2: Tracker+ in / out with Ableton Live.



NOTES

An external device, keyboard or drum pads can be connected to control Tracker+ by MIDI either by USB or via the 5 Pin MIDI dongle. Notes can be played or recorded and CC messages controlling assigned parameters.

Example Configuration 1: Tracker+ as the secondary follower.



Tracker+: Config > MIDI

Clock In	MIDI In jack
Clock out	Off
Transport in	MIDI In jack
Transport out	Off
Notes In	MIDI In jack
Notes in channel	CH1
MIDI out	Off
CC in	MIDI In jack
CC in channel	CH2
Middle C	C-5
Clock sync delay	0.0

The keyboard will control the current instrument in Channel 1.

A#3	16	----	----
OFF	--	----	----

Notes can be recorded in live recording mode. The note and note off messages are captured in the steps.

Control change (CC) assignments

Function	CC #
Performance Mode Tracks	CC41 - CC48
Performance Mode Effects	CC51 - CC62
Master Mixer Levels	CC71 - CC78
Delay & Reverb Mix	CC79 & CC80
Dry Mix	CC81
Line In Level	CC82

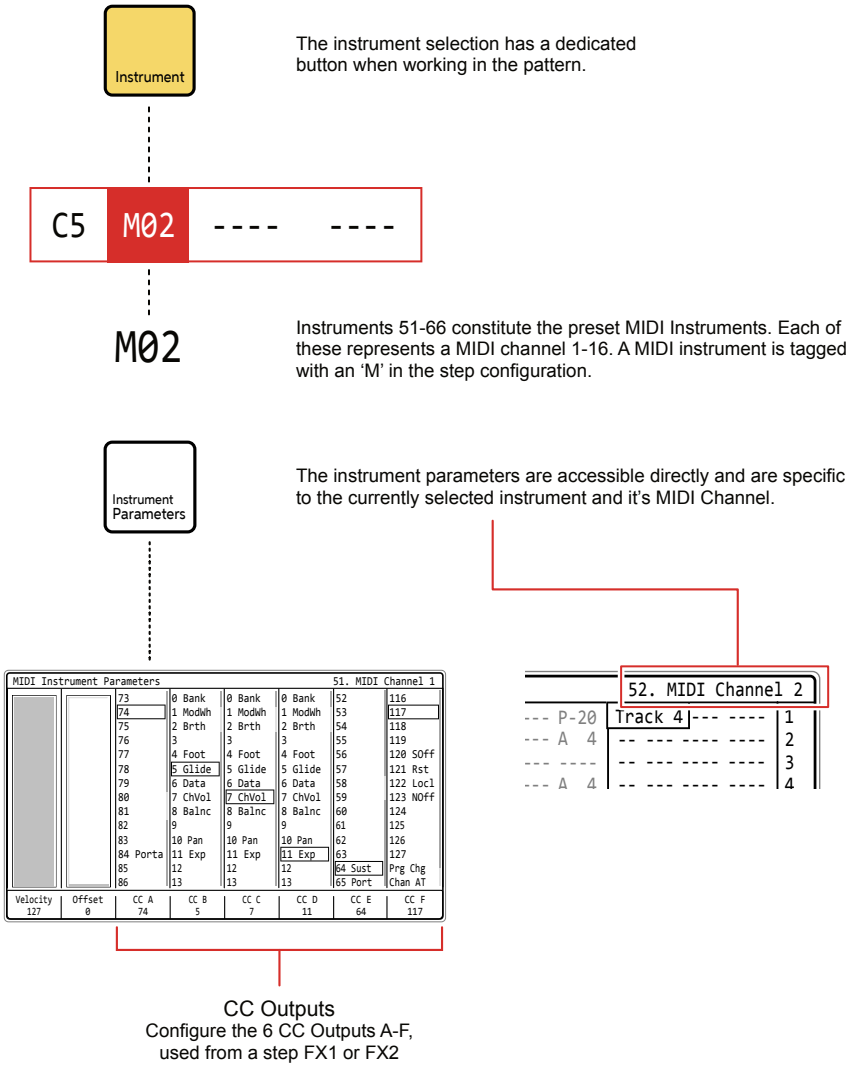
Keyboard or Pad controller used for MIDI note information on channel 1. To record variable velocity into Tracker+ make sure the Config > General > 'Recording Options' have a Velocity option enabled. Otherwise velocity is recorded at fixed value.

Optional controller used for control change (CC) messages on channel 2

11.4 MIDI Instrument Overview

NOTES

Tracker+ has a series of MIDI Instruments that can be assigned to steps in a pattern. MIDI is defined per step, not per track, so MIDI and Audio instruments can reside on the same track in the same pattern. A MIDI instrument essentially defines the MIDI channel on which to transmit data out and also gives access to the instruments MIDI parameters.



The default velocity to send out can be applied as well as MIDI Latency compensation in the Offset parameter

This illustration shows several MIDI instruments set for MIDI Channel 2. The notes values will be sent on the defined channel to a connected device such as another synth or DAW. MIDI Out would need to be set correctly in the Config > MIDI parameters to transmit the note values over MIDI.

The MIDI transmitted will be based on the project tempo. Also remember that tempo FX can be applied to steps which would also affect the MIDI output timing.

NOTES

The Instrument parameters will reflect the MIDI output options available when selecting a step with a MIDI instrument configured. The Note is set in the step and will be sent on the channel defined in the MIDI instrument. The default velocity can also be set for MIDI out.

The same general process is followed when working with MIDI steps as with audio steps. More details are covered in a prior section.

CREATING A MIDI NOTE OUTPUT STEP

1. Press [Pattern] to select the Pattern Mode page.

2. Select the target step to edit. Use [Up], [Down] or Turn (Jog) to scroll top to bottom. Press [Left], [Right] to select a track. Example Row 1 of Track 1. The step should be highlighted with the green bounding box.

3. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow editing of the step.

4. Note: Hold [Note] + [PAD] to set a note for the step.
   Also with the note already selected, Turn (Jog) to change it's value.
   Long Press [Note] alone will set an empty step to default note i.e. C0.

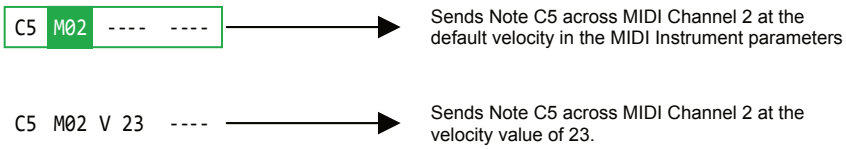
5. Instrument: Hold [Instrument] + Turn (Jog) to change to an instrument from the 51 to 61 list. Each one will represent a MIDI channel where the step messages will be transmitted. The Instrument will be indicated with an 'M' in the instrument slot for the step.

Instrument #	Name	Step Tag	MIDI Channel
51	MIDI Channel 1	M01	1
52	MIDI Channel 2	M02	2
53	MIDI Channel 3	M03	3
54	MIDI Channel 4	M04	4
55	MIDI Channel 5	M05	5
56	MIDI Channel 6	M06	6
57	MIDI Channel 7	M07	7
58	MIDI Channel 8	M08	8
59	MIDI Channel 9	M09	9
60	MIDI Channel 10	M10	10
61	MIDI Channel 11	M11	11
62	MIDI Channel 12	M12	12
63	MIDI Channel 13	M13	13
64	MIDI Channel 14	M14	14
65	MIDI Channel 15	M15	15
66	MIDI Channel 16	M16	16

11.5 Handling MIDI Velocity

NOTES

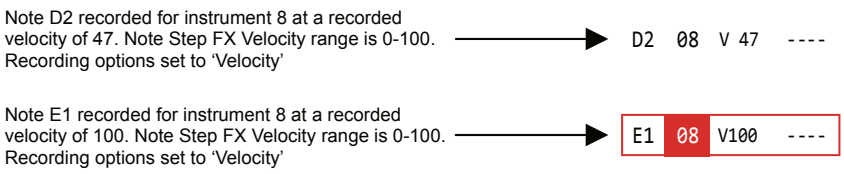
The velocity of notes triggered by steps is set by default in the MIDI instrument parameter page. This ranges from 0-127. An FX1 or FX2, 'V' Step effect can also be applied which will define the velocity specifically for the step. External gear will receive the note message with the defined velocity transmitted.



The FX value in Tracker+ is based on a range of 0-100, however most devices and DAWs use a velocity range of 0-127. Bear this in mind when applying and recording FX velocity

Recording of note data can be performed from external gear into Tracker+ in Live Recording mode using [Rec] + [Play]. To be able to record velocity, the Config > General > 'Recording Options' would need a velocity option to be set i.e. 3 or 4 from the lost below. The options are:-

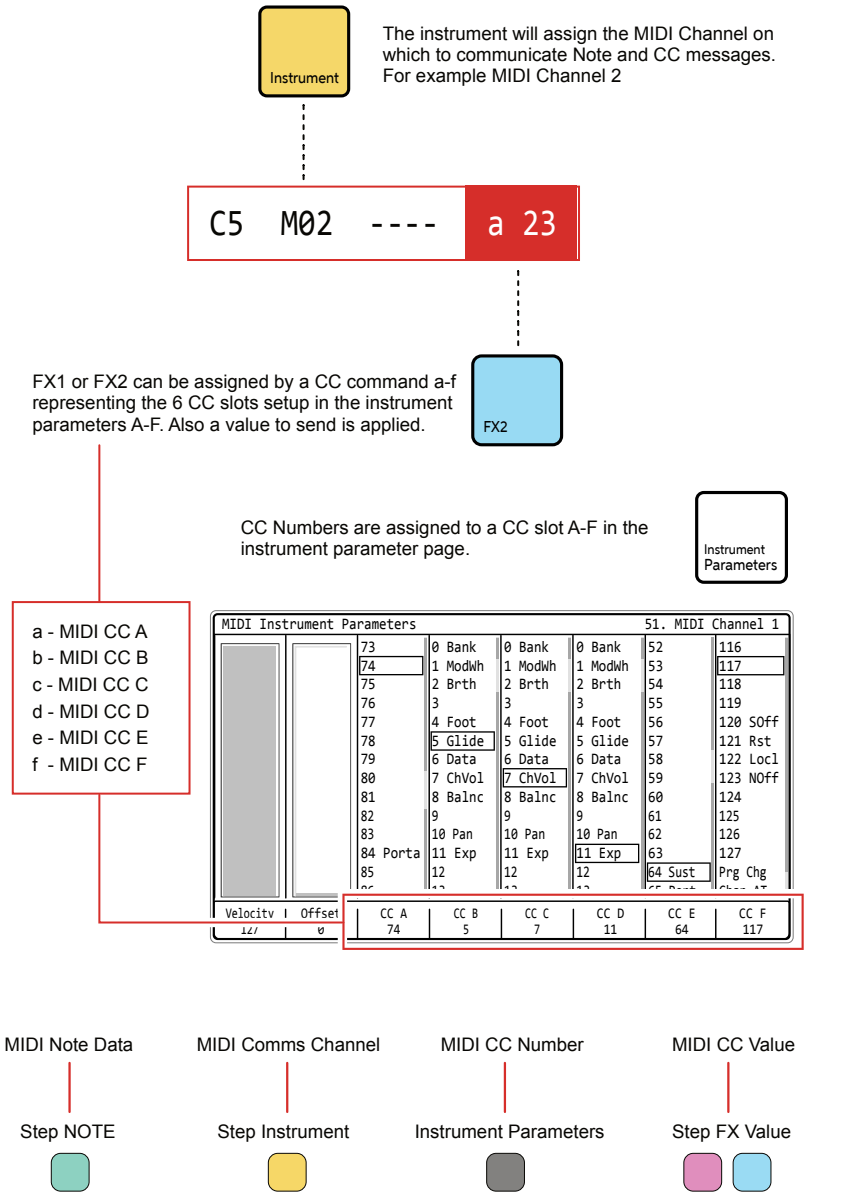
1. Only Notes: Records only quantized notes into a pattern.
2. Microtiming: Records notes with microtiming into a pattern.
3. Velocity: Records quantized notes and velocity into a pattern.
4. Microtiming + Velocity: Records notes with microtiming and velocity into a pattern.



NOTES

11.6 MIDI CC Out

Control change messages, also called CC, can be sent from Tracker+ on a step by step basis. While note message will trigger the notes on other gear, CC initiates a parameter change, for example to adjust Pan or Filter Cutoff on another device. These would need to be matched at Tracker+ end to align to the parameter on the external device. Six CC parameter slots A-F exist in Tracker+ that can be allocated a CC and then used in FX1 or FX2 of a step. These are also combined with synth macros functionality.



This illustration shows that Control Change 74 is assigned to CC A, which in turn is assigned as FX2 with a value of 23. If, for example, Elektron Digitakt is the receiving device, this step will send a message to control the filter cutoff.

11 MIDI

The MIDI CC outputs in the Instrument Parameters list follows MIDI standards. Many of the CC's are undefined. Check the MIDI configuration for any connected devices to know what CC will affect which parameter. This list is available for each of the 6 CC Assignments A - F. Also the Program Change 128, Channel Aftertouch 129 and Polyphonic Aftertouch 130 can also be configured here.

CC #	Function	CC #	Function	CC #	Function	CC #	Function
0	Bank (MSB)	32	Bank (LSB)	64	Sustain	96	Data Increment +
1	Mod Wheel (MSB)	33	Mod Wheel (LSB)	65	Portamento	97	Data decrement -
2	Breath Control (MSB)	34	Breath Control (LSB)	66	Sostenuto	98	NRPN LSB
3		35		67	Soft Pedal	99	NRPN MSB
4	Foot Pedal (MSB)	36	Foot Pedal (LSB)	68	Legato	100	RPN LSB
5	Glide (MSB) Portamento Rate	37	Glide (LSB) Portamento Rate	69	Hold 2	101	RPN MSB
6	Data Entry (MSB)	38	Data Entry (LSB)	70		102	
7	Channel Volume (MSB)	39	Channel Volume (LSB)	71		103	
8	L/R Balance (MSB)	40	L/R Balance (LSB)	72		104	
9		41		73		105	
10	Pan (MSB)	42	Pan (LSB)	74		106	
11	Expression Pedal (MSB)	43	Expression Pedal (LSB)	75		107	
12		44		76		108	
13		45		77		109	
14		46		78		110	
15		47		79		111	
16		48		80		112	
17		49		81		113	
18		50		82		114	
19		51		83		115	
20		52		84	Portamento Amount	116	
21		53		85		117	
22		54		86		118	
23		55		87		119	
24		56		88	High Definition Velocity	120	All sound off
25		57		89		121	Reset all
26		58		90		122	Local On / Off
27		59		91		123	All notes off
28		60		92		124	
29		61		93		125	
30		62		94		126	
31		63		95		127	

NOTES

CREATING A MIDI CC OUTPUT STEP

1. Ensure the Config > MIDI settings are set to send MIDI.
2. Press [Pattern] to select the Pattern Mode page.
3. Select the target step to edit. Use [Up], [Down] or Turn (Jog) to scroll top to bottom. Press [Left], [Right] to select a track. Example Row 1 of Track 1. The step should be highlighted with the green bounding box.
4. Press [Rec] to switch to recording mode. The step bounding box will turn red and allow editing of the step.
5. Hold [Instrument] + Turn (Jog) to select a MIDI instrument from the 51 to 61 part of the list. Each one will represent a MIDI channel where the step messages will be transmitted. The Instrument will be indicated with an 'M' in the instrument slot for the step. Example M01.
6. Hold [FX1] or [FX2] + Turn (Jog) to set a CC for the step. This will be one of the 6 options a-f. These double up functionality with synth macros. The selected option will show as a lower case letter in the step FX slot. Example: 'a' for MIDI CC A / Macro 1.
7. With the FX selected, Turn (Jog) to set it's CC value. A series of steps could for example be filled with a ramp up of values. This can be changed later. Example: Set to 50.
8. Press [Instrument Parameters] to select the MIDI configuration.
9. Select a CC Slot that matches the FX selection - Example, Press [CC A] screen button. Any other CC A - CC F can be selected to match up the the FX setting.
10. Press [Up] or [Down] or Turn (Jog) to scroll the CC parameter lists. Highlight with the bounding box the CC number to assign. This would typically be based on the MIDI CC configuration on a receiving device. Example: CC 74 is Filter Cutoff on Elektron's Digitakt.
11. In this example, CC Number 74 will transmit a CC value of 50 over MIDI Channel 1 when the selected step is triggered.

11.7 MIDI CC In

NOTES

Control change messages can be received by Tracker+. The CC In would need to be set in the Config > MIDI menu along with the CC In channel for the MIDI channel. The MIDI CC Mapping within Tracker+ has a set of pre-defined destinations for CC messages.

CC #	Function	CC #	Function
41	Performance Effect Track 1 Pattern Select	71	Master - Track Mixer Track 1 Volume Level
42	Performance Effect Track 2 Pattern Select	72	Master - Track Mixer Track 2 Volume Level
43	Performance Effect Track 3 Pattern Select	73	Master - Track Mixer Track 3 Volume Level
44	Performance Effect Track 4 Pattern Select	74	Master - Track Mixer Track 4 Volume Level
45	Performance Effect Track 5 Pattern Select	75	Master - Track Mixer Track 5 Volume Level
46	Performance Effect Track 6 Pattern Select	76	Master - Track Mixer Track 6 Volume Level
47	Performance Effect Track 7 Pattern Select	77	Master - Track Mixer Track 7 Volume Level
48	Performance Effect Track 8 Pattern Select	78	Master - Track Mixer Track 8 Volume Level
51	Performance Effect Slot 1 Value - Top Row	79	Master - Global Mixer Delay Mix
52	Performance Effect Slot 2 Value - Top Row	80	Master - Global Mixer Reverb Mix
53	Performance Effect Slot 3 Value - Top Row	81	Master - Global Mixer Dry Mix
54	Performance Effect Slot 4 Value - Top Row	82	Master - Global Mixer Line Input
55	Performance Effect Slot 5 Value - Top Row		
56	Performance Effect Slot 6 Value - Top Row		
57	Performance Effect Slot 7 Value - Top Row		
58	Performance Effect Slot 8 Value - Top Row		
59	Performance Effect Slot 9 - Top Row		
60	Performance Effect Slot 10 Value - Top Row		
61	Performance Effect Slot 11 Value - Top Row		
62	Performance Effect Slot 12 Value - Top Row		

NOTES

11.8 Program Change

Tracker+ has the ability to send program change messages. These are MIDI standard messages which trigger a change to the current ‘program’ of an external device by switching presets or configurations. This of course will be dependant on the program / bank / preset structure and operation of the receiving device. Often synths use banks and presets so the behaviour of the device from a program change may vary.

Program change is configured as a CC parameter using number 129.

Example

Pattern 1

Track 3	Track 4
D6 03 ---- ----	D6 03 ---- ----
D4 04 ---- ----	D6 M01---- a 01
D4 04 ---- C 50	D6 03 ---- ----
D4 04 ---- ----	D6 03 ---- V 65
D6 03 ---- ----	D6 03 ---- ----
D4 04 ---- ----	-- M01---- a 02
D4 04 ---- C 50	D6 03 ---- ----
D4 04 ---- ----	-- M01 m 50 a 03

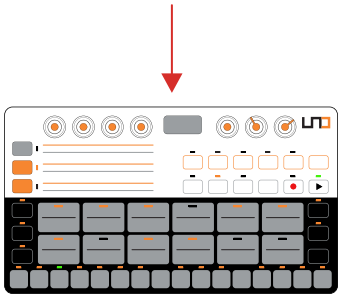
MIDI Channel 1, with a Program Change, 129 assigned to CC A. The value will trigger the program selection, in this example 01.

MIDI Channel 1, with a Program Change, 129 assigned to CC A. The value will trigger the program selection, in this example 02.

A Program Change is activated slightly ahead of the note. However it may be better to trigger the program change on a step prior to the note step or at the end of a previous pattern sequence and use micro move ‘m’ to adjust the timing.

Pattern 2

Track 3	Track 4
D6 03 ---- ----	D6 M01---- ----
D4 04 ---- ----	E6 03 ---- V 50
D4 04 ---- C 50	G6 M01---- ----
D4 04 ---- ----	D6 03 ---- V 65

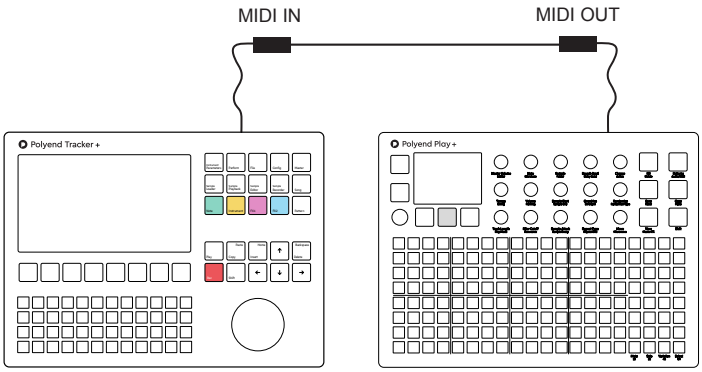


The receiving device may have a configuration that is not an exact match. For example a program may start at 1 rather than 0. The offset may need to be taken into account in the Tracker+ step program change message.

11.9 MIDI Synthesizer

NOTES

The MIDI synthesizer mode is a feature that allows integration when controlling Tracker+ from an external MIDI device and by controlling up to 8 voices across MIDI. Tracker+ will operate as a secondary follower to an external controller which will be able to play and control Tracker+ instruments. This also brings a tight integration between Tracker+ and Polyend Play, Play+ and Tracker, where the MIDI CC is pre-mapped.



Tracker+:

Config > MIDI

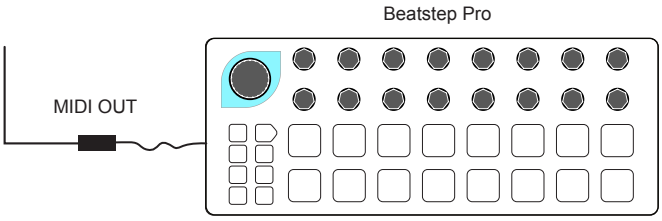
Clock In	MIDI In jack
Clock out	Off
Transport in	MIDI In jack
Transport out	Off
Notes In	MIDI In jack
Notes in channel	CH1
MIDI out	Off
CC in	MIDI In jack
CC in channel	CH1
Middle C	C-5
Clock sync delay	0.0

Play+:

Menu > MIDI > CC Mapping > Jack Channel 1

Choose: Set Values for Polyend Tracker+

The rotary controls in play will be automatically mapped to have full integrated over MIDI CC with Tracker+ selected instruments. Play can control Tracker+ with the pads.

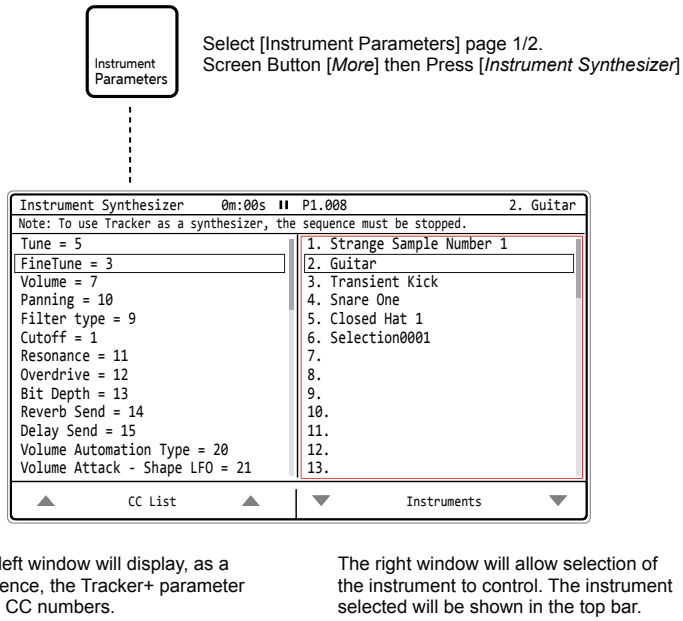


Other MIDI Devices can be used with Tracker+ MIDI Synthesizer mode to control the instruments.

NOTES

While integration with Polyend Play+ is a build in feature for mapping Play's controls, other MIDI controllers can also be used in Synthesizer Mode.

Synthesizer Mode



Notes on using MIDI Synthesiser Mode:-

- The external device must be configured to match the MIDI Synthesizer CC controls and general Tracker+ MIDI configuration, i.e. Channel etc.
- Tracker+ sequencer must be stopped to use as a MIDI synthesizer.
- The Synthesizer mode page does not have to be displayed to operate in this mode. The last selected instrument will be the one used for the synthesizer control from an external controller.

NOTES

SETTING UP A MIDI SYNTHESIZER

1. Ensure the external device is configured to set MIDI CC as per the Tracker+ CC assignments in the MIDI Synthesizer page. Also that the MIDI configuration is matched, for example same MIDI channel.

2. Connect the external controller to Tracker+, for example using the MIDI In connection and a MIDI cable between devices. Tracker+ uses a MIDI dongle to convert between MIDI 5 Pin DIN and Mini Jack.

3. To get the reference of CC configurations set up as default for Tracker+, Press [Instrument Parameters], select Screen Buttons [*More*], then [*Instrument Synthesizer*]. The CC's are displayed in the left window as a reference.

4. To select an instrument as the destination target from the MIDI controller and as the synthesizer instrument, scroll the right window to select the desired instrument. This is also displayed in the top row.

5. The lists can be scrolled with the screen buttons. If the window is selected, highlighted red, the [Up] and [Down] Buttons or the (Jog) wheel will scroll the list.

6. The instrument parameters will adjust when controlled by the external MIDI controller. The changes are animated real time on the instrument parameter displays.

NOTES

Synthesizer Mode - MIDI CC Configurations

CC #	Function	CC #	Function
5	Tune	83	Cutoff Automation Type
3	Finetune	84	Cutoff - Attack - Shape LFO
7	Volume	85	Cutoff - Decay - Speed LFO
9	Filter Type	86	Cutoff Sustain
1	Cutoff	87	Cutoff Release
11	Resonance	88	Cutoff Amount
12	Overdrive	102	Wavetable Position Automation Type
13	Bit Depth	103	Wavetable Position - Attack - Shape LFO
14	Reverb Send	104	Wavetable Position - Decay - Speed LFO
15	Delay Send	105	Wavetable Position Sustain
16	Wavetable / Granular Position	106	Wavetable Position Release
17	Wavetable Window / Granular Length	107	Wavetable Position Amount
20	Volume Automation Type	108	Granular Position Automation Type
21	Volume - Attack - Shape LFO	109	Granular Position - Attack - Shape LFO
22	Volume - Decay - Speed LFO	110	Granular Position - Decay - Speed LFO
23	Volume Sustain	111	Granular Position Sustain
24	Volume Release	112	Granular Position Release
25	Volume Amount	113	Granular Position Amount
26	Panning Automation Type	114	Finetune Automation Type
27	Panning - Attack - Shape LFO	115	Finetune - Attack - Shape LFO
28	Panning - Decay - Speed LFO	116	Finetune - Decay - Speed LFO
29	Panning Sustain	117	Finetune Sustain
30	Panning Release	118	Finetune Release
31	Panning Amount		

12

Performance Mode

Performance mode is a special Tracker+ feature which creates an environment aimed at live and real-time performances. Ideal when playing a live gig or improvising and showing off skills of live remixing, performing and on-the-fly creativity. These variations and 'on the fly' changes bring fun and challenge in a live performance environment and expand the creativity in using Tracker+. Perform mode can be accessed directly by the dedication function button and covers Tracks 1-8. The perform page has 12 effect slots. Think of the performance effects as presets where a defined offset from the default parameter value can be applied either momentarily or as a fixed change. Up to 21 effects are available for loading into the 12 available slots. The effect values are then triggered by using the pad grid, where each column of pads relates to each of the 12 effects, giving 4 value options represented by pad rows per effect. These can be applied when playing patterns or a complete song. Muting can also be managed for tracks in perform mode. Track patterns can be remixed and combined with the performance effects and also along with instrument adjustments which can offer up a comprehensive base for live performance. A dedicated 'top row' of values can also be controlled externally using MIDI. This MIDI option can also be used to control the effect values and the track pattern selection. The performance template by default is saved globally. However this can be set in the 'Config' menu to be saved on a per project basis. Perform brings a different dimension to Tracker+, taking the desktop 'programming' of songs or patterns into a more live performance and improvisation environment.

12.1 Performance Mode Overview

NOTES

Performance mode allows real time improvisation control over tracks, patterns and songs adding variation and interest when playing live. This is normally handled in the 'Perform' page although MIDI Input can also be set to control the performance parameters.

Performance Mode
Press [Perform] to select the performance mode screen, Edit parameters and configure the effects in record mode, press [Rec]. It is possible to cycle between pattern and song pages while performance mode is active.

Playback Status
Shows pattern loop ↻ playback or full song ▸ playback

Perform Status
Shows Performance Mode is active.

MIDI CC
Indicates the top row, MIDI CC controllable values.

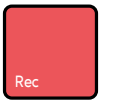
Punch In Effects
12 Configurable performance effect slots

Track Selection
Selects which tracks will be affected by the performance effects applied, indicated red.

Punch In Parameters
Effect parameters (4 per effect) each represented by a pad in the 4 x 12 Pad grid

Pad Grid
Each pad represents the turning On or Off of the value defined for the 12 effects. The effect values are configurable with row 1, by default set to off (- - -).

Selected effects are indicated green or red (if editing) on the Tracker+ screen and the respective pad is lit.



REC Mode
Press [Rec] to edit the perform configuration. The selections will be indicated red as will the effect selection bounding box. Effects can be configured and the values edited in REC mode of Perform.

NOTES

12.2 Performing - Quick Start

Assuming the effects are set up, values in place then real-time improvisations can be performed on tracks. Think of performance effects as applying parameter value variations as an offset from the current setting.

PERFORMING LIVE WITH THE PERFORMANCE EFFECTS

1. Press [Perform] to select the Performance Mode page.
2. Press [*Track 1*] - [*Track 8*], screen buttons to select for applying effects on (red) or off. Only the selected, red lit tracks will be affected by the triggered performance effects.
3. Press [Play] to play a pattern or [Shift] + [Play] to play a song, also toggles between song and pattern play. The display header will show the pattern or song playback symbol. Also the perform mode symbol will be displayed.

Pattern Play	0m:00s ↻ P1.028⤮
Song Play	0m:00s ▶ P1.028⤮

4. To punch in an effect, Press [PAD]. The effect is retained once pressed. The Pad column represents each of the 12 loaded effects.
   The Pad row represents the effect value setting.
   A default series of effects will be in place, example column 1, Volume.
5. To clear the effect, Press [PAD] for the effect, row 1.
   The Pad row 1 is reserved for restoring the default, i.e. effect off.
6. To apply a temporary effect, Hold [PAD] + Turn (Jog) - when NOT in [Rec] mode, i.e. parameters are green. The effect value will be applied while the pad is held and will revert to the default when the pad is released.
7. The effect will apply an offset to the current value of the parameter affected. The value will be as stated in the parameter row. For example, set pitch offsets for lead or bass tracks.
8. To mute / unmute tracks, Hold [Shift] + Press [*Track 1*] - [*Track 8*] screen buttons.
9. Press [Instrument Parameters] and [Perform] to toggle between audio instruments and perform to offer more variations while still performing.

12.3 Selecting Tracks

NOTES

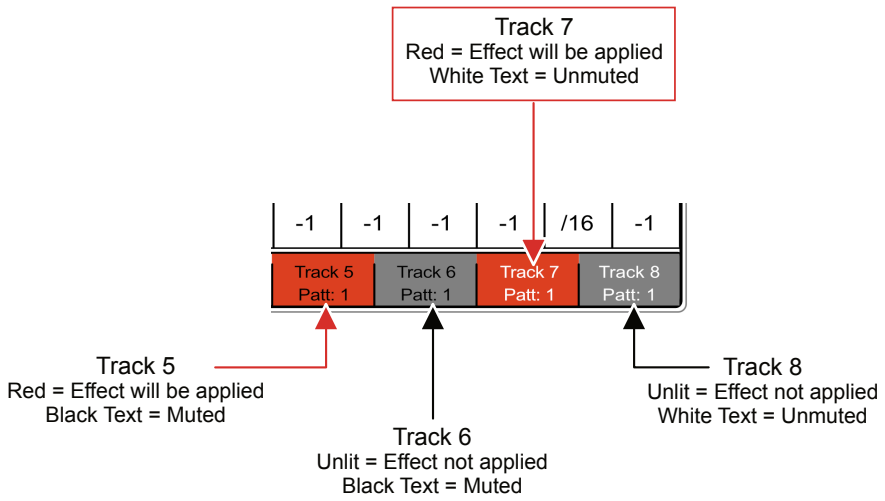
Effects triggered in performance mode will only affect the tracks specifically selected from Track 1-8. These are selected using the screen buttons and will be indicated in red. Tracks can also be muted from within this page.

SELECTING TRACKS TO APPLY PERFORMANCE EFFECTS

1. Press [Perform] to select the Performance Mode page.
2. Press [*Track 1*] to [*Track 8*], these are buttons that are represented by the 8 screen buttons. This will toggle selection on or off.
3. A selected track will be lit red in the screen button label, which means any performance effect triggered will apply to only the selected tracks. Tracks showing unlit will be audible but the effect will not be applied.

MUTING TRACKS IN THE PERFORM PAGE

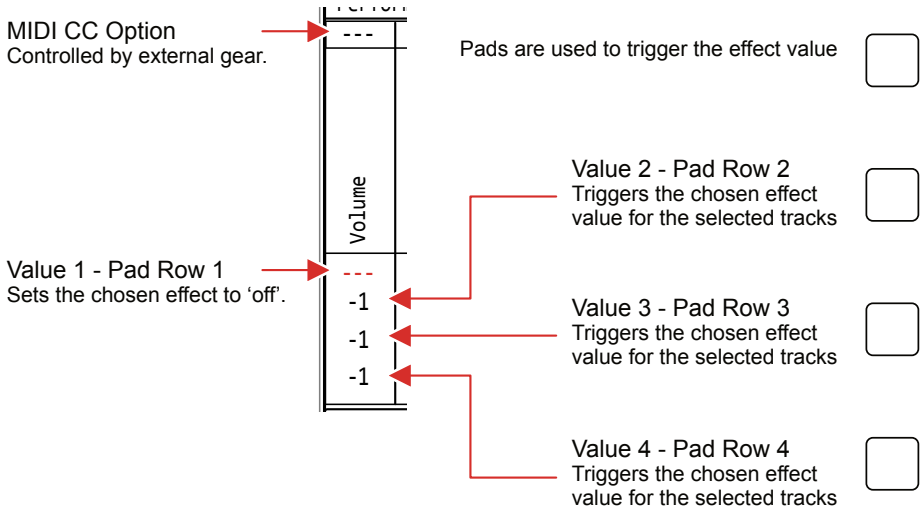
1. Press [Perform] to select the Performance Mode page.
2. Press [Shift] + [*Track 1*] to [*Track 8*], these are buttoned represented by the 8 screen buttons. This will toggle mute on or off.
3. A muted track will be labelled to reflect the state when pressing [Shift]. In the normal display a muted track screen button text label is shown in black, while text for an unmuted, audible track is displayed in white.



NOTES

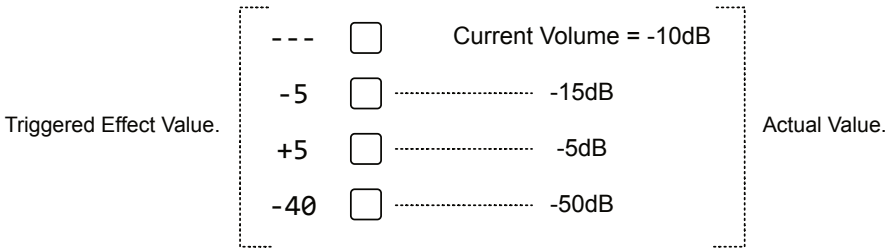
12.4 Perform Effect Values

Each of the configured effects has four slots which hold the value for the effect. These are triggered by the respective pad. The top row is reserved as a default 'off' and the other three values are set relative to the current effect parameter value. In addition a 'top row' of values are available to be controlled by MIDI CC inputs from external gear if desired.



Value
Value is referenced as an offset applied to the current setting for the effect. The first row, value offset is off by default to allow a quick revert to the default state.

For example, with volume set at -10dB, the values are offset by each value, when triggered.



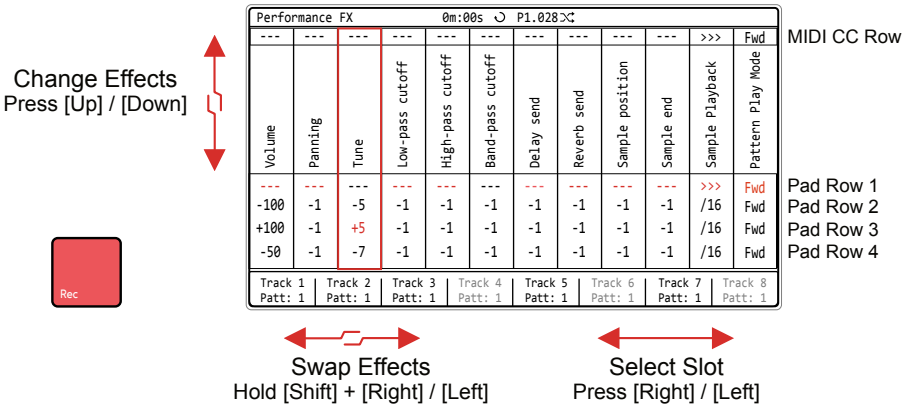
12.5 Configuring Effects

NOTES

Effects can be setup in record mode with up to 12 effects being configured from a library of 21 performance effects. By default the performance preset is saved on a global basis, but can be changed to be saved ‘per-project’ in the ‘Config’ settings.

CREATING AN EFFECT TEMPLATE

1. Press [Perform] to select the Performance Mode page.
2. Press [Rec] to select record mode. Values and bounding box are red.
3. Navigate between effect slots, Press [Left] or [Right].
4. To cycle the effect for the selected slot, Press [Up] or [Down].
5. To swap effects, Hold [Shift] + [Right] or [Left]. This will swap the currently selected effect along with the values with the slot chosen. The pad value selections will remain with the original slot. This can also be used creatively.
6. Hold [PAD] + Turn (Jog) to change the value of the specific effect row. The selected Pad will be representative of the effect value. Pad row 2 is the 2nd row of effect values, Pad row 3, is 3rd row of effect parameters. Top row 1 is reserved to reset the value to the default.
7. Repeat steps 3 - 5 for other effect slots. 12 slots are available.
8. Press [Rec] to turn record mode off.



NOTES

SETTING A TRACK PATTERN

1. Playback stopped.
2. Press [Perform] to select the Performance Mode page.
3. Hold [*Track 1*] to [*Track 8*] Screen button + Turn (Jog). This selects the pattern assigned to the chosen track. These can also be changed during playback as a real-time performance and remix technique.

CHANGING PERFORM TEMPLATE SAVE BEHAVIOUR

1. Press [Config] to open the project configuration menu.
2. Ensure the left window is highlighted red i.e. in focus. Navigate windows by pressing [Left] or [Right]. Menu windows will automatically be selected when pressing the relevant screen keys below the window to navigate [*Up*] or [*Down*].
3. Press [Up] [Down] or Turn (Jog) to highlight with the bounding box the ‘Project Settings’ option. Alternatively press the relevant screen keys below the left window to navigate [*Up*] or [*Down*].
4. Press [Up] [Down] or Turn (Jog) to highlight with the bounding box over the ‘Performance preset’ option in the central window. Alternatively press the relevant screen keys below the central window to navigate [*Up*] or [*Down*].
5. To change the selected parameter / setting, Press [*Enter*]. The parameter pop-up window listing the available options will appear.
6. Turn (Jog) or Press [Up] / [Down] or [*Up*] / [*Down*] Screen buttons to highlight the desired option. The ‘Global’ setting will save the perform template for all projects while ‘Per Project’ will save on an individual project basis. Global is default.
7. Press [*Apply*] screen button to confirm selection or [*Cancel*] screen button to exit without changing.

12.6 Perform Effects List

NOTES

Tracker+ has 21 performance effects that can be selected and loaded into each of the 12 effect slots. The same effect can be applied to multiple slots. While these are called effects, they in fact control parameters that apply variations to the parameter values.

Effect #	Name	Range / Comments
1	Volume	-100 to +100. Volume level adjustment
2	Panning	-100 to +100 Stereo Position
3	Tune	-48 to +48 Semitones. Also applies to MIDI.
4	Low-Pass Cutoff	-100 to +100. Filter frequency adjustment
5	High-Pass Cutoff	-100 to +100. Filter frequency adjustment
6	Band-Pass Cutoff	-100 to +100. Filter frequency adjustment
7	Reverb Send	-100 to +100. FX Send level
8	Delay Send	-100 to +100. FX Send level
9	Sample Position	-100 to +100. Audio sample start position
10	Sample End	-100 to +100. Audio sample end position
11	Sample Playback	<<< >>> Backward, Forward direction.
12	Volume LFO Speed	-28 to +28. LFO Speed
13	Panning LFO Speed	-28 to +28. LFO Speed
14	Finetune LFO Speed	-28 to +28. LFO Speed
15	Filter LFO Speed	-28 to +28. LFO Speed
16	Grain/WT LFO Speed	-28 to +28. LFO Speed
17	Step Repeater	Off, 16, 12, 8, 6, 4, 3, 2, 1, 1/2, 1/3, 1/4, 1/6, 1/8, 1/12, 1/16.
18	Pattern Play Mode	Fwd, Back, Rnd, C1-C20 Fixed or Predefined algorithm ‘C’ play modes
19	Pattern Length	1-128 Total length (all tracks - selected or not)
20	Bit Depth	-12 to +12 Bit depth adjustment
21	Overdrive	-100 to +100 Overdrive adjustment

NOTES

12.7 Remixing

Tracker+ can remix tracks on the fly. There are two techniques worth noting when applying track mixing. Firstly the ‘Pattern Play Mode’ effect has 20 algorithms C1-C20 that allow pattern mixing based on predefined shuffling of existing patterns. This is called ‘Custom Play Mode’. Secondly tracks can manually be remixed live when playing a song. Both techniques operate in performance mode.

Custom Play Mode

USING A CUSTOM PATTERN PLAY EFFECT

1. Press [Perform] to select the Performance Mode page.
2. Press [Rec] to select record mode. Values and bounding box are red.
3. Navigate between effect slots, Press [Left] or [Right].
4. To load the effect for the selected slot, Press [Up] or [Down]. Select the ‘Pattern Play Mode’ effect.
5. Hold [PAD] + Turn (Jog) to change the value of the specific effect row. Fwd-Forward, Rev- Reverse and Rnd - Random options as well as ‘C’ options. Set the following example as a starting point. Any C1-C20 value can be selected:-
   - Pad row 2 is the 2nd row of effect values Set to C18.
   - Pad row 3, is 3rd row of effect parameters. Set to C19.
   - Pad row 4, is the 4th row of effect parameters. Set to C20.
6. It is possible to set up, other ‘Pattern Play Mode’ effects into other slots to cover more of the other C1-C17 custom presets.
7. Press [Rec] to turn record mode off.
8. Trigger the pads to activate the alternate mixes based on the predefined ‘C’ Setting triggered. Also it is possible to use slot 1 as a dynamic and temporary change by holding [PAD] Row 1 and Turning (Jog). This will clear when released.

NOTES

Manual Play Mode

MANUALLY REMIXING PATTERNS ON THE FLY

1. Press [Perform] to select the Performance Mode page.

2. Ensure [Rec] mode is off.

3. Press [Shift] + [Play] to play the Song. The patterns can be remixed across tracks while a song is playing so ensure that multiple patterns are available in the song. The perform icon indicates remix is possible.

4. Remix track playback:-

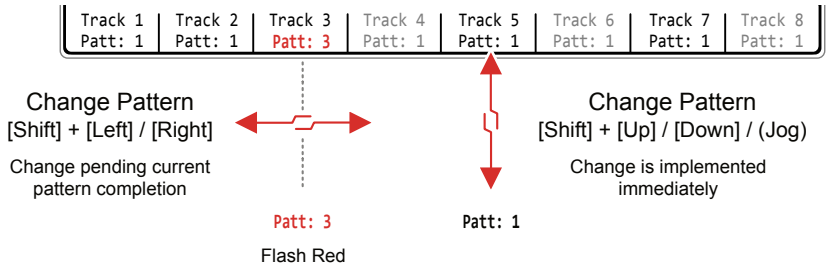
   - Hold [*Track x*], Screen button + Press [Left] or [Right]. This will play the newly selected pattern when the current one completes. The pattern will flash red to show this is cued ready for the change.

   - Hold [*Track x*], Screen button + Press [Up] or [Down] or Turn (Jog). This will play the newly selected pattern immediately upon selection.

   - It is possible to hold one or more [*Track x*] screen buttons at the same time to select patterns for multiple tracks simultaneously.

4. The patterns will play, led by the longest ones which loop play while shorter ones are cut.

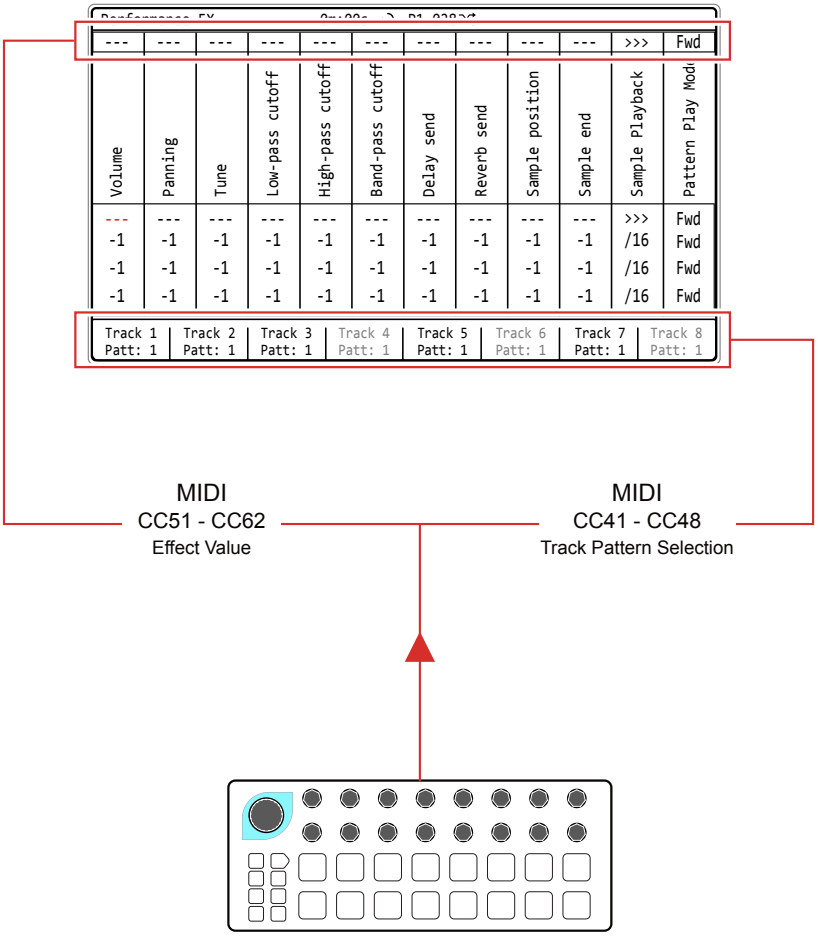
5. Exit the performance mode. The changes made in performance mode are disabled upon exit.



NOTES

12.8 Controlling Performances with MIDI

An external MIDI controller can easily be assigned to control performance effects in perform mode. The MIDI Incoming CC's are predefined for the 12 effect slots and the 8 track selections. The top row of the performance effects are representative of the MIDI incoming values.



Example: Beatstep

Configured with rotaries to control the CC51-CC62 which sets the effect value. These can also have preset CC values triggered from the pads. The CC range on the controller is 0-127 which will be reflected across the range of the effect, which may be different. For example -100 to +100 Panning range will be controlled by a 0 to 127 CC Value.

Rotaries can also be set to select a track and a pattern using CC41-CC48. The value will represent the pattern which can also be assigned to a pad so that this triggers a specific pattern.

Ensure the MIDI settings for communication and the defined connection type are set correctly in the Config settings to ensure incoming MIDI control, clock, channel, transport etc are received correctly especially for the incoming CC data.

12.9 Advanced Pattern Playback

NOTES

The simple option is to press [Play] to start and stop pattern playback. During playback a number of ‘on-the-fly’ pattern changes can be performed. This is more useful when improvising and performing.

PLAYING PATTERNS - REFRESHER

1. Press [Pattern] to select the Pattern page.
2. Press [Play] to play the current pattern.
3. Press [Play] to pause / stop a currently playing pattern.
4. Press [Song] + [Play] to play a song.
5. Hold [Song] to temporarily display the song page of press [Song] to switch to the song page from the pattern page.
6. Hold [Shift] + [Track x] screen button to mute or unmute a track.

NOTES

PLAYING PATTERNS - ADVANCED PLAYBACK

1. Press [Pattern] to select the Pattern page.
2. Press [Play] to play the current pattern.
3. Hold [*Pattern*] screen button to check available patterns, represented by the lit pads.
4. To sequentially change the pattern on the fly:
    - Press [Pattern] + [Left] or [Right] buttons to select a new pattern. This will initiate a sequential pattern change which awaits the end of the current pattern before switching to the new pattern selection. Pattern text for the screen button flashes red when cued.
    - Press [*Pattern*] screen button + [Left] or [Right] buttons to select a new pattern. This will initiate a sequential pattern change which awaits the end of the current pattern before switching to the new pattern selection. Pattern text for the screen button flashes red when cued.
4. To immediately change the pattern on the fly:
    - Press [Pattern] + [Up] or [Down] buttons to select a new pattern. The (Jog) wheel can be used instead of the arrow keys. This will initiate a pattern change immediately.
    - Press [*Pattern*] screen button + [Up] or [Down] buttons to select a new pattern. The (Jog) wheel can be used instead of the arrow keys. This will initiate a pattern change immediately.
    - Press [*Pattern*] screen button + [PAD], for the new pattern. This will initiate a pattern change immediately.

13

System

While on face value this section may appear like the boring bit (I guess in many ways that could be true), but don't overlook the content. While things like firmware updates are considered rare or one off activities, there are also some elements that at least are useful to be aware of. There are some useful tips and advise that may help if you are in a sticky situation. Also there are some topics that might be useful around housekeeping and good disciplines in working with Tracker+. But there are also some tips that may be helpful beyond the administrative duties. For example capturing screen images is an often overlooked feature and can be an aid to storing settings that you might want to refer to later or share with others. The visual style and fonts for the screen and pad brightness can be adjusted and options on how these can be changed based on personal taste are provided. Also the USB Drive feature which allows direct access to transfer files across a USB connected device. Of course the general firmware update options are also covered in this section, although it is recommended to always follow Polyend's guidelines and instructions with each firmware release as it is possible these may change per update. The current firmware version can be checked in the startup screen and in the firmware config page. Registration of the device is required to access downloadable content and firmware updates. Registration is performed at at Polyend.com. This section not only covers system wide features but also is a catch all for topics not covered elsewhere.

13 System

13.1 Device Registration

NOTES

In order for Polyend to provide device support and to give access to future firmware updates, your Tracker+ must be registered on the Polyend website.

REGISTRATION / SUPPORT CHECKLIST

- Create an account at Polyend.com.
- Register your device, ie Tracker+ in the relevant account section.
- Access firmware downloads in your account.
- Licence information is available at polyend.com/licenses/

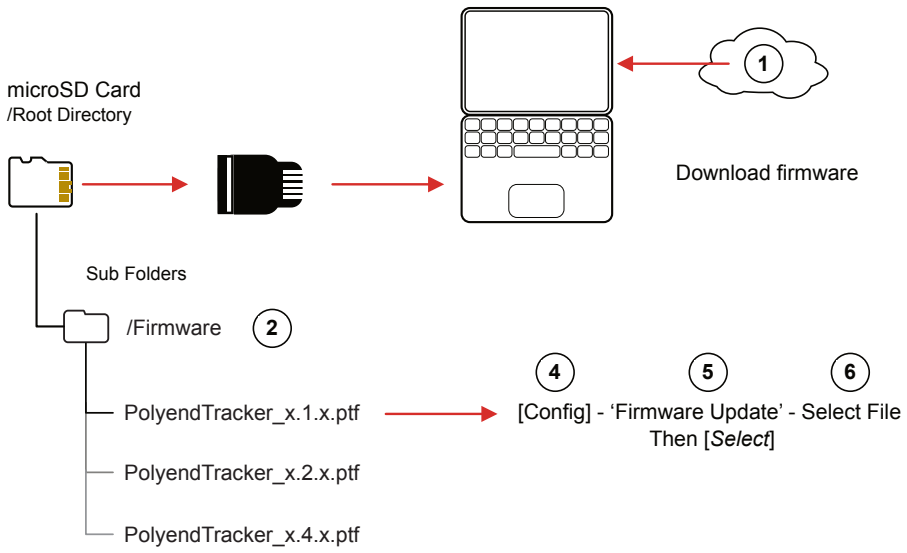
NOTES

13.2 Generic Firmware Update

Firmware updates may be provided by Polyend from time to time, to fix bugs or add new features. The process of updating can be performed in several ways. When performing updates it is strongly advised to follow the Polyend instructions supplied with each update. The instructions here are a generic guide.

FIRMWARE UPDATE

1. Download the latest firmware. Access firmware updates for your device from your registered account at Polyend.
2. Copy the downloaded .ptf firmware file into the /Firmware folder. This can be found in the root directory of the microSD card.
3. Insert the microSD card into Tracker+ and power up
4. Press [Config] to open the configuration and settings menu.
5. Navigate to the 'Firmware' menu, then the central 'Firmware Update' Option. Press [*Enter*] screen button to open the menu.
6. In the central pop-up window, select the firmware file to install. Press [*Select*] screen button and [*Yes*] to confirm or [*Cancel*] to quit.
7. The firmware will install and the on screen prompts provided will guide. The install process is typically less than 1 minute.
8. Tracker+ should restart, but press On/Off if a manual start is required after 100% of the update is completed.



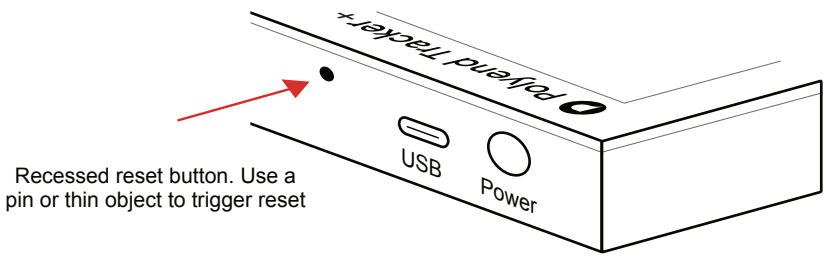
13.3 Emergency Firmware Update

NOTES

Firmware updates are available from the Polyend portal for your registered device. A reset button is provided, recessed behind the rear panel for emergency situations . A reset can be performed if there are issues with the update method or to clear Tracker+ issues but should not be used as a regular process for updates.

TRACKER+ FIRMWARE RESET

1. Download the latest firmware. Access firmware updates for your device from your registered account at Polyend.
2. Copy the downloaded .ptf firmware file into the /Firmware folder. This can be found in the root directory of the microSD card. Also ensure any previous update files remain in the firmware folder.
3. Insert the microSD card into Tracker+.
4. Ensure the Tracker+ is powered on.
5. Use a pin or thin object to press the internal reset button. This is located on the rear of the device behind the case next to the USB connection.
6. Tracker+ will reset and search the firmware folder on the microSD card. A random firmware will be selected and installed in order to recover Tracker+ to a working state. The install process is typically less than 1 minute.



Rear Panel

The reset option is useful if any lock ups or freezing occurs on Tracker+. It is not necessary in these situations to download a new OS. It is advised to keep a series official, known good, firmware releases in the /firmware folder. For example 1.5.0, 1.6.0, 1.4.0. That way steps 4-5 can be performed in case of issues and a random update will be performed from a known state. A manual update in the ‘config’ menu to select the latest version can then follow.

NOTES

13.4 Resetting the Configuration

There may be occasions when the changes in configurations have caused problems and tracking back is not possible. An example may be that MIDI settings applied may need to be reset. The whole configuration settings can be reset to the defaults. This is performed in the config menu.

RESETTING CONFIG

1. Press [Config].
2. In the main menu list select the ‘Firmware’ option using the screen navigation buttons.
3. In the Firmware, central window sub menu select ‘Reset config’.
4. Press [*Enter*] screen button and follow the prompts. Any previously changed settings will be restored back to default values.

13.5 User Interface Style

NOTES

The ability to change the display and pad style is available in the configuration setting. This may be useful when working in different environments and essentially is based on personal taste.

CHANGING USER INTERFACE STYLE

1. Press [Config].
2. Navigate using the screen buttons to the ‘General’ menu option.
3. In the central sub menu, four user interface elements exist:-
   - Display Brightness. Options are High (default), Medium and Low.
   - Display Theme. Options are Original (default) or Monochrome.
   - Display Font. Font for text. Options are original (default) or new.
   - Pads Brightness. Options are High (default), Medium and Low.
4. To change the setting highlight the desired sub menu option using the screen buttons or arrow keys.
5. Press [*Enter*] screen button option. The available options as listed above are presented. Use the screen navigation or arrows to select the desired option.
6. Press [*Apply*] screen button option to confirm the selection or [*Cancel*] to quit the function.
7. The desired setting will be visible on the screen or pads.

NOTES

13.6 Screen Capturing

The ability to capture screen images from the currently displayed page is a built in feature of Tracker+.

SCREEN GRAB OF CURRENT IMAGE

1. Select the page to capture.
2. Press [Shift] + On/Off Button. This is the power on button at the rear of the unit. This action is not accompanied by any visual or audible acknowledgement of capture being completed.
3. The screen will be captured and saved onto the microSD card as a .BMP image file in the snapshots folder.

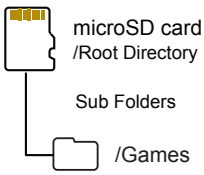
13.7 Games

NOTES

Tracker+ can run NES ROM games, and a collection are supplied readily available and stored in the microSD card games folder and accessed through the 'File' options. NES ROM files can be found online but there may be compatibility and performance issues with some. Some communities online have tested various games for using with Tracker+. Load any other NES ROM files into the games folder on the microSD to access.

ACCESSING THE GAMES

1. Press [File].
2. Press [*Games*] screen button. This will present the list of available games that are located in the microSD card /Games folder.
3. Scroll and navigate the list using the screen buttons, [Up] or [Down] buttons or Turn (Jog).
4. Press [*Start Game*] screen button to start the highlighted game.
5. Controls will vary depending on which game is playing. The typical key commands for control are:-
   - The [Up], [Down], [Right], [Left] Arrow keys are used for navigation.
   - The [*A*] and [*B*], 1st and 2nd Screen buttons for control.
   - [Play] to Select or Start
6. To exit a game, Press […], 8th Screen Button to Quit.



Additional, compatible .nes files can be downloaded from the web and when located in the /Games folder, will be accessible to Tracker+.

Default Games List (.nes)

Alter_Ego

Chase

Lan

LawnMower

Utaco

ZoomingSecretary

NOTES

13.8 Card Compatibility & Backing Up

It is always good practice to backup or even better have a spare microSD card loaded and ready for use with Tracker+. The following information on microSD compatibility is important:-

- A 16GB microSD card is supplied with Tracker+. Larger size microSD cards can also be used. Supplied microSD card is: Sandisk Ultra, SD, 16GB, HC1 A1.
- The format of the card must be FAT32 MBR (Master Boot Record). Other formats will not be recognised.
- Some folders and sub folders are created by Tracker+ based on the process carried out. Sample folders for example will be split when reaching 100 files.
- Tracker+ uses the microSD card in real time and will not function without the microSD card being installed. A ‘bad’ folder / file structure on the microSD card may also cause Tracker+ problems.
- Some hidden folders exist for example the ‘workspace’ folder. It is good practice to create a duplicate copy of the microSD card for backup purposes. Also if Tracker+ does not boot up and crashes, restoring the full original folder / files structure or using the backup microSD card is advised.
- Tracker+ is supplied with an microSD card USB reader for use with most Mac / PC’s which helps transfer files.
- Polyend typically provide pre-release firmware as open beta. While this is great to get early insights into new features, by definition beta releases will have inherent problems. Only use beta versions to help test for bugs and features and do not use in a live gig or critical production environment.

Tip: microSD cards can be notorious in there levels of performance with various gear. This is mainly due to the wide variety of speeds and specifications available. Gear producers do not and in fact cannot test every single microSD specification or each of the manufacturers products. It is therefore recommended to stick as close as possible to the same card type that the gear producer supplies with its gear. At least it is known that this microSD card type will then have been tested thoroughly with the device itself by the device manufacturer as well as the user community.

NOTES

BACKING UP THE CARD FOLDERS & FILES

1. This is recommended as a first task when first operating Tracker+ to have the original structure saved. Also periodic backups is important to save the projects and files which will be created over time.

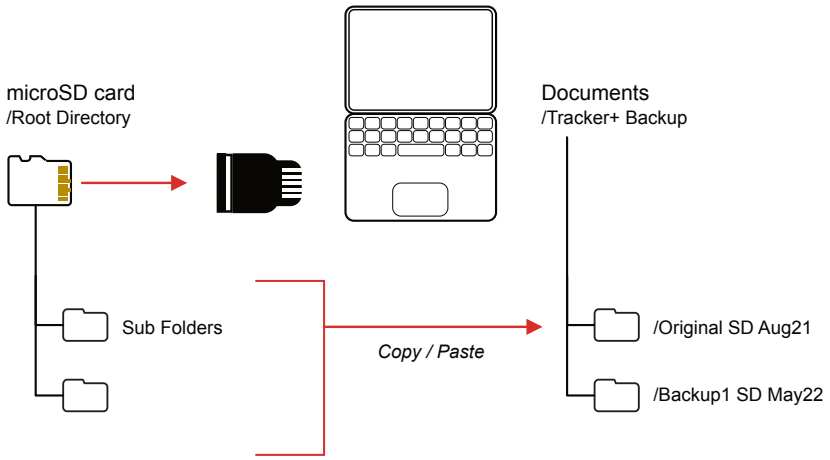
2. Use a compatible microSD card reader or the supplied USB SD Adapter to connect the microSD card to a PC or Mac.

3. Use the file manager (depends on the PC/Mac Operating System) to create a ‘Tracker+ Backup’ Folder in your documents folder and create a sub folder for each backup i.e. ‘Original SD Aug21’, ‘Backup1 SD May22’. It is good practice to name backup folders by date.

4. Select all of the folders in the microSD card root directory and copy them to the PC/Mac clipboard.

5. Paste, the copied folders into the ‘Tracker+ Backup’ sub-folder for the specific backup.

6. Return the microSD card to Tracker+ for normal operation.



NOTES

13.9 USB Storage

The microSD card can be extracted and used in a Mac or PC for file transfers. In addition, Tracker+ allows direct access to the microSD card while inserted on board the Tracker+ Device using a USB connection. This is set in the Config menu options.

ACCESSING THE CARD STORAGE OVER USB.

1. Ensure the PC / Mac is connected to the Tracker+ with a USB data cable. Ensure the cable is data compatible and not just a power supply USB cable. It is recommended to connect directly between the Tracker+ and the PC / Mac so ensure the Tracker+ can also be power from the PC / Mac.

2. Ensure the Tracker+ has the microSD card inserted and is powered on.

3. Press [Config] for the configuration settings.

4. Press [*Up*] or [*Down*], 1st & 2nd Screen buttons to navigate to the 'USB' menu. The arrow keys and (Jog) can also used when navigating in the left main menu list.

5. In the central window pane, Press [*Up*] or [*Down*] Screen buttons to navigate to the 'Storage' option. The arrow keys can be used to navigate to the central pane and scroll the options.

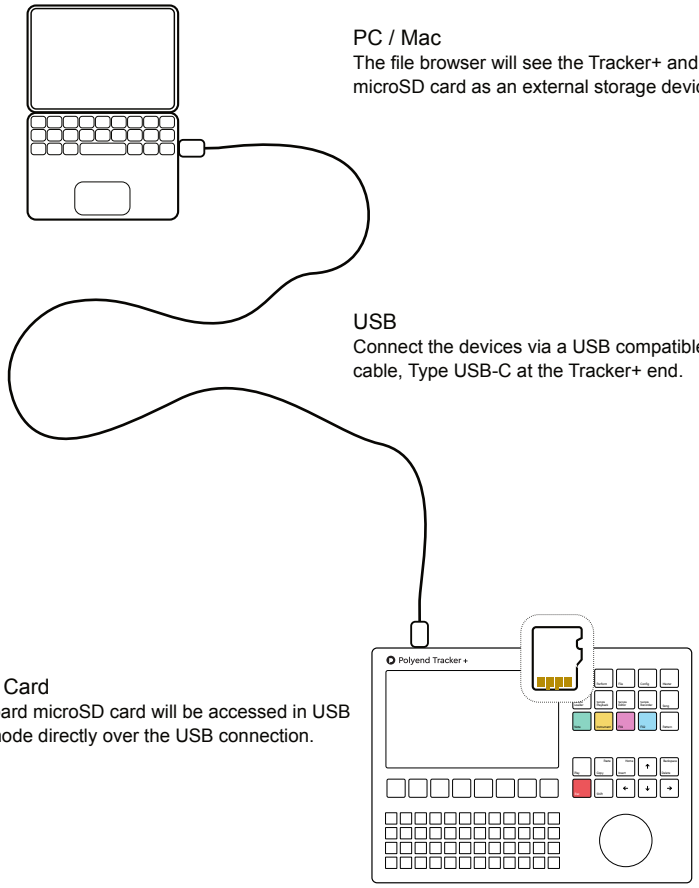
6. Press [*Enter*] screen button. The Tracker+ will switch to 'USB Storage Mode' and a warning presented to ensure power is retained in this mode and during data transfer.

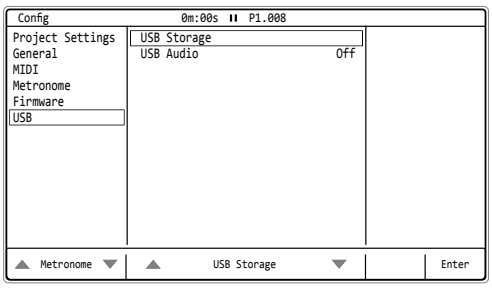
7. The PC or Mac file browsers will see the Tracker+ as an external device. This allows files or samples to be transferred and data to be backed up to / from the microSD card.

8. To exit this mode, Press [*Exit*] screen button. The Tracker+ will switch back to normal operating mode.

NOTES

USB Storage





NOTES

13.10 Hexadecimal Option

The classic trackers typically used hexadecimal number format. This can be a little daunting if unfamiliar and especially in the more modern age and therefore decimal number is used as default. However, maybe for the more nostalgic users, numbering in hex mode is also an option.

CHANGING BETWEEN DECIMAL & HEXADECIMAL VIEW.

1. Press [Config] for the configuration settings.
2. Press [*Up*] or [*Down*], 1st & 2nd Screen buttons to navigate to the 'General' menu. The arrow keys and (Jog) also used in the left main menu list.
3. In the central window pane, Press [*Up*] or [*Down*], 4th & 5th Screen buttons to navigate to the 'Numbering mode' option. The arrow keys can be used to navigate in the central pane.
4. Press [*Enter*] screen button. The options to change will appear.
5. Turn (Jog) or Press [Up] or [Down] to select between 'Decimal, Steps from 0' to use standard decimal numbers starting at step 0, 'Decimal, Steps from 1' where the decimal system is used and steps start at 1, and the 'Hexadecimal' option for a classic tracker view.
6. Press [*Apply*] screen button or [*Cancel*] to quit.

Hexadecimal to Decimal Converter

Hex	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Dec	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

13.11 Official Specifications

NOTES

Audio Input:

- Unbalanced Mono, TS (Tip-Sleeve)
- Line Input:
  - Audio Input Impedance: 29 kOhm Impedance.
  - Input level: 8.2 dBu peak
  - Signal to Noise Ratio: 90 dB.
- Microphone Input:
  - Microphone Input Impedance: 2.9 kOhm Impedance
  - input level: 8.2 dBu peak.
- USB Audio for sampling

Audio Output

- Line Output:
  - Output level 9 dBu peak (when 10k Ohm Load).
  - Signal to Noise Ratio: 97 dB.
- Headphone Output:
  - Output level: 17.6 dB (when 16k Ohm Load)
  - Signal to Noise Ratio: 98 dB.

NOTES

13.12 Supplied Accessories

Whats in the Box?

- Tracker +
- Original USB A power adapter (with different standard plugs set)
- Branded USB-C cable (2 m).
- 1x Stereo 3.5 mm jack to 2x 6.3 mm jack adapter.
- 1x MIDI Type B, 3.5 mm jack to DIN adapter.
- 16GB microSD Card.
- microSD to USB-A dongle adapter.
- Warranty & Safety and Polyend Play Essential information documents.

13.12 Changelog

OS & Manual	Feature Update	Manual Update
1.0.2 d		Changelog added (this table) for OS and content updates. Page 33.
		Various style edits including adding microSD terms.
		Additional information added: Power supply, page 15. USB audio, Page 248.
1.0.2 e	Release	Audio USB clarity
1.1.0 c	Updates	Updates Removed random reference for FX1 & FX2 - Page 77

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