Torso T-1

t|so

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Getting Started

Torso T-1 is a 16 track, algorithmic sequencer that brings a modern twist to hardware pattern sequencing. T-1 is not in itself an instrument and does not therefore generate any audio or sound. This sequencer is different, forgoing layers of menu diving through multiple screen pages in favour of hands-on touch and feel. The user interface is immediate with 23 control buttons and 18 endless rotary / push knobs. Multiple connectivity options make it an ideal device to use centrally in a rig or as part of a wider setup. Integrating with desktop, modular, mobile or software DAW systems is possible through a variety of connectivity options. CV, Gate, WiFi Link, MIDI over USB or direct are all available onboard. The objective of this unique device is to build beyond traditional step sequencing with a focus on generative and evolving pattern development. The tweaking and tuning of synth parameters is a familiar process when designing sounds or performing live with a synthesizer.

These same principles are applied with T-1 where sequencer parameters can be changed, tweaked and adjusted real time. Always remember that the [Bank] button will backup and return home if needed. In summary, the T-1 brings a more immersive, creative and fun process to the fore. The tactile user experience encourages on-the-fly ad-libs and live performance as well as general composition. Expect a more organic and fluid parameter driven approach to the creation of patterns and arrangements. This book takes a user perspective in getting the best from the T-1. It offers a companion guide as well as a quick reference. Read cover to cover or just step in and out when needed. Learn and capture your own knowledge by adding personal notes. The Torso T-1 Notebook is a guide that helps you grow towards your destination while having fun on the journey.

1 Getting Started

1.1 Introduction

Torso T-1 is an algorithmic sequencer. It does not generate audio but is used as a controller for other sound generating instruments such as hardware or plugin synthesizers.

What makes T-1 Different?

Traditional / Typical Sequencers.	Torso T-1 Algorithmic Sequencer
Linear programming process.	Algorithmic sequence generation.
Program and play	Organic flow and continuous evolution.
Rigid programming workflow.	Organic user experience.
Preset variations	Real-time and live performance adjustments. Play like an instrument.
Step based approach.	Euclidean and algorithmic rhythms and arpeggiation.
MIDI DIN or USB Interface most commonly used	MIDI through USB. MIDI DIN. WiFi and Ableton Link, CV and Gate.
USB or Mains Powered	USB Powered - Low power usage, ideal with portable rechargeable battery packs.
Often display screen menu or application reliant configuration	No screen. Control configurable plus configuration app option.
Focus on sequencing	Multiple sequencing options plus on board modulation
No sound generation	No sound generation
Defined track count	16 polyphonic tracks, maximum of 256 patterns and bank storage.

Your Notes Can be written here Here

1.2 How to Use This Notebook

This book combines a formal reference and notebook, collectively bringing together a comprehensive guide to the T-1 Sequencer.

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.

Conventions used in this book.

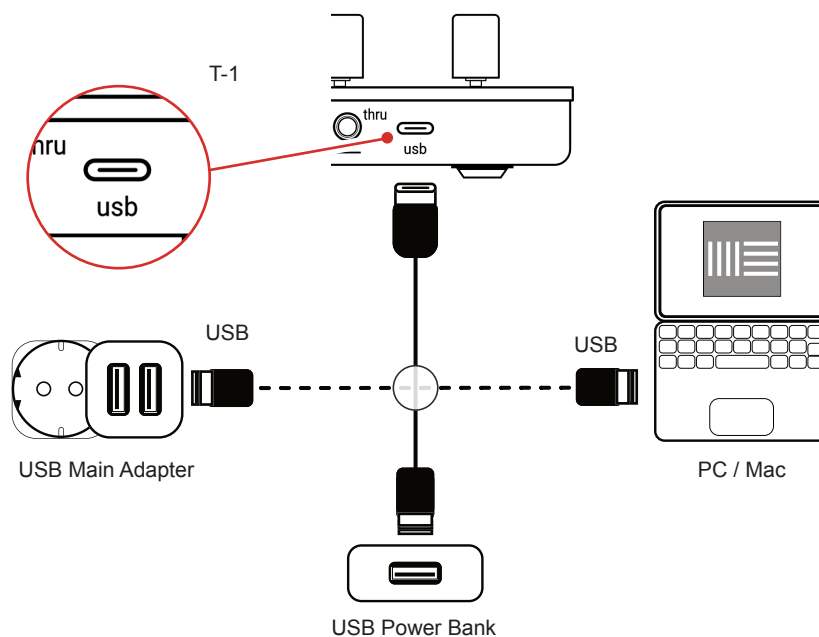|	
(KNOB)	Rounded parentheses represent the 16 endless rotary control knobs. Where necessary, the command action will be presented before the control and the actual function named in uppercase inside the parenthesis. Press to view or double press to lock the view of the parameter, turn or press and turn to view and edit.
	Examples: 'Press (STEPS)' or 'Turn (STEPS)', 'Turn (SUSTAIN)'.
[BANK]	Square parentheses contain functions that are selectable using one of the 16 value buttons, the 2 performance buttons or one of the 5 general control buttons. The command action is presented in normal, partially capitalised text before the control function which is labelled uppercase within the parenthesis.
	Examples: 'Press [MUTE]', 'Press [CTRL]', 'Press [VB1]' for first value button.
[CTRL] + (KNOB)	Button combinations are indicated with a '+' between commands when used together. The 'ctrl' button is commonly used as secondary control function which allows access to additional options. This button is held in conjunction with other buttons and knobs. Secondary functions are labelled in grey, second row of knobs and horizontally to the side of the buttons. The primary or secondary function label name will be used in the descriptions depending on the instruction context.
	Examples: 'Hold [CTRL] + Turn (OFFSET)', 'Hold [CTRL] + Press [SAVE]'
ORANGE ■	The value buttons are multi-coloured and act as a visual indicator of the selected function. This is documented within these instructions by the colour name in uppercase followed by an appropriately coloured tag.
Value Buttons 1-16 **[VBx]**	The 16 Value buttons are located bottom left and are numbered 1-8, left to right - top row, 9-16, left to right - bottom row. These by default select tracks, but their function will change depending on the mode selected. The function will be given after the button.
	Example: Press [VB1] Chrom - With respect to scales

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1.3 Power Up

T-1 Sequencer is powered using the USB-C connection located at the rear of the unit. There is no power switch and T-1 will power on immediately when power is applied. T-1 requires a minimum of 390mA with 100% brightness but will operate from 200mA upwards. The T-1 Default brightness setting is 75% which is adjustable. A 500mA minimum power source is recommended.
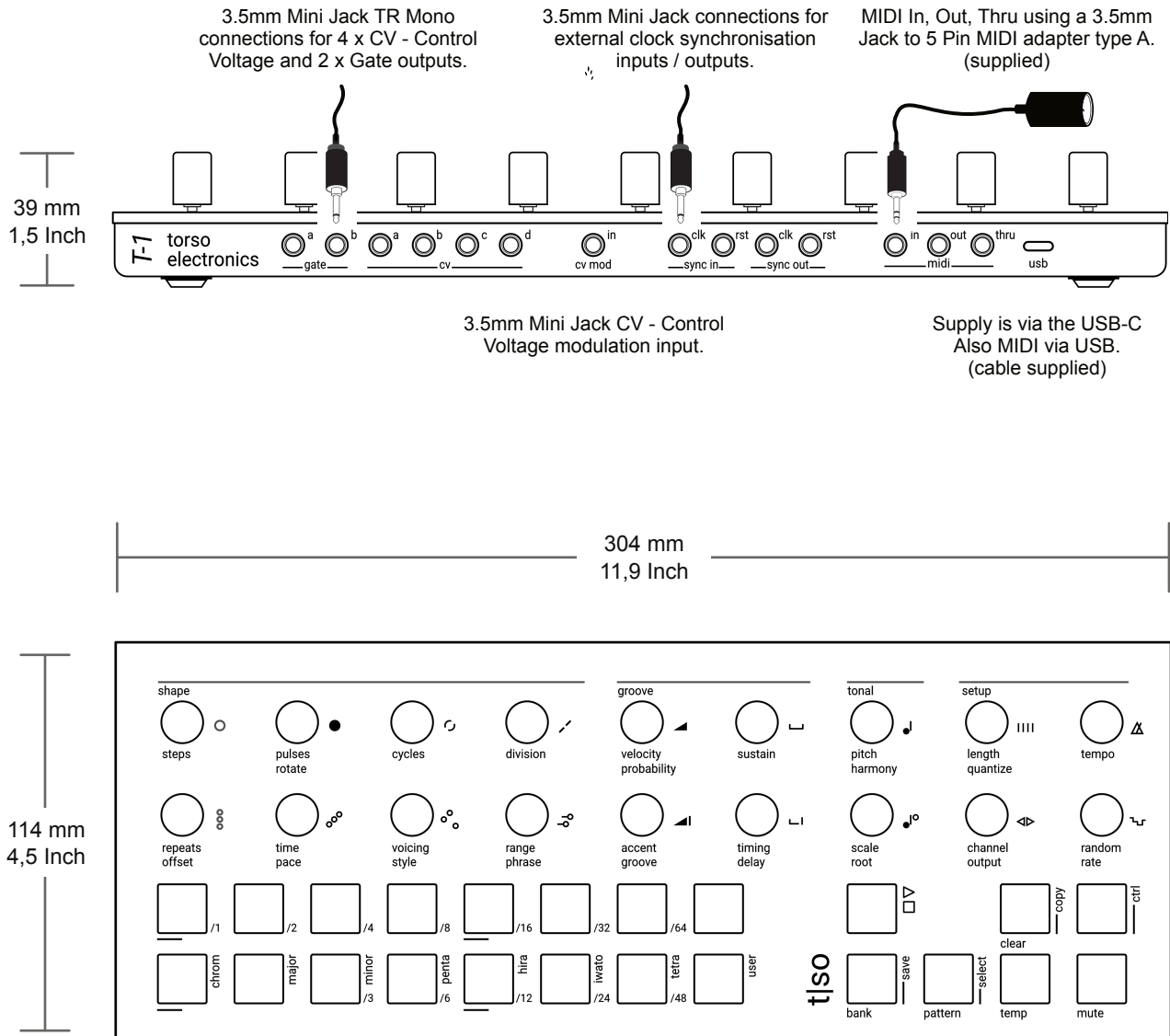
▌ POWERING ON / OFF THE T-1 SEQUENCER

1. Connect the supplied USB-C cable between T-1 Sequencer and a USB supply. This could be:-

    •   A portable USB power bank.

    •   USB Mains supply adapter.

    •   A powered USB hub.

    •   A PC or Macbook.

    •   A tablet or mobile device.

    •   Another powered device such as an instrument or synth.

2. T-1 will start up and the pads will illuminate ORANGE ■.

3. To power the unit off, disconnect the USB-C cable or the supply.

1.4 Hardware Overview

T-1 is an algorithmic sequencer and does not, in itself generate any audio.

3.5mm Mini Jack TR Mono connections for 4 x CV - Control Voltage and 2 x Gate outputs.

3.5mm Mini Jack connections for external clock synchronisation inputs / outputs.

MIDI In, Out, Thru using a 3.5mm Jack to 5 Pin MIDI adapter type A. (supplied)

39 mm
1,5 Inch

3.5mm Mini Jack CV - Control Voltage modulation input.

Supply is via the USB-C Also MIDI via USB. (cable supplied)
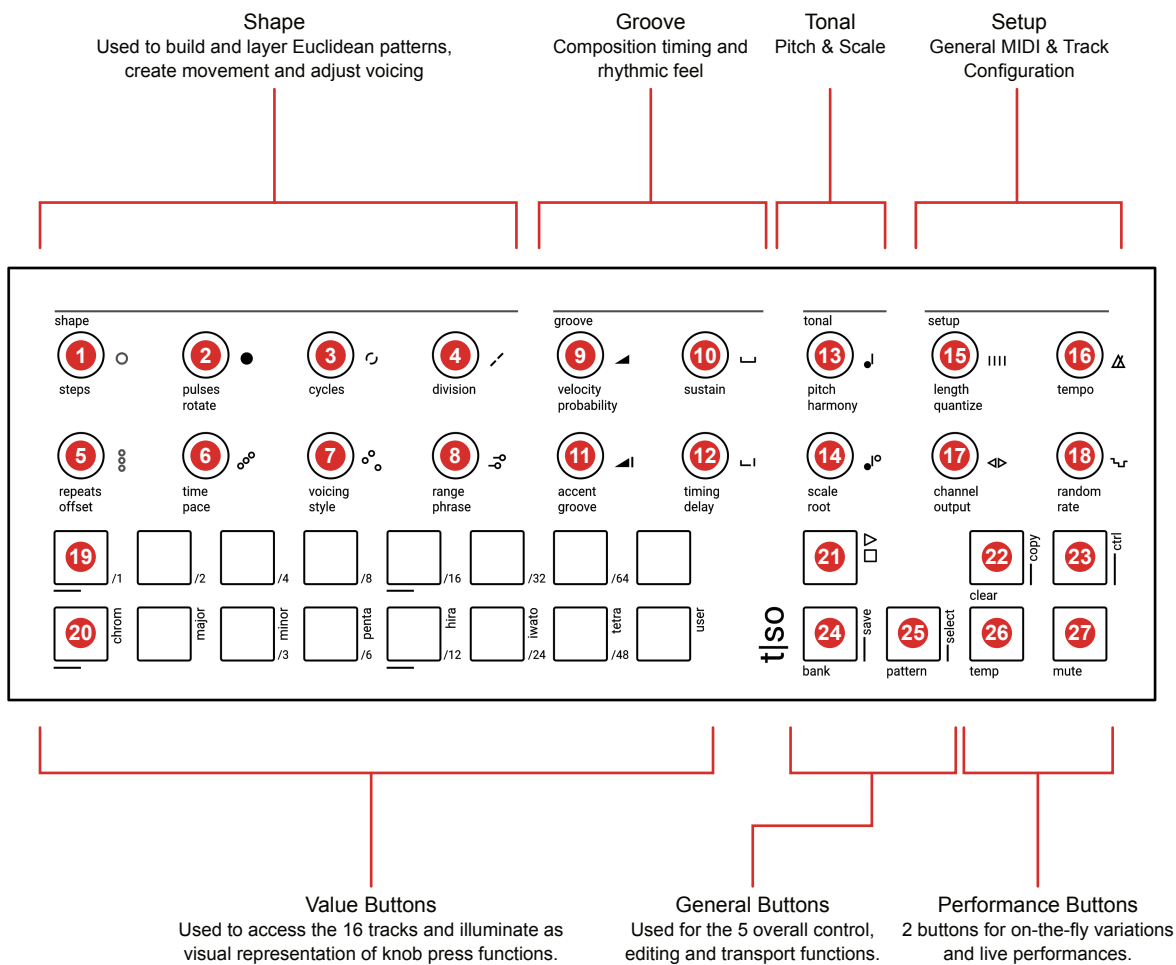
304 mm
11,9 Inch

114 mm
4,5 Inch

All dimensions include enclosure plus the control knobs, buttons and rubber feet. Weight is 815 grams (1,8 lbs).

T-1 is supplied along with a USB-C to USB-A cable and a 3.5mm to MIDI adapter.

1 Getting Started

T-1

The user interface has a total of 7 control areas consisting of 18 endless rotary / push control knobs and 23 multi-colour buttons. The knobs are clustered towards 3 specific workflow / performance topics plus configuration setup. The two rows, total of 16 value buttons are used by default for track selection plus they also act as a visual indicator. The 2 performance buttons, temp and mute, help control on-the-fly changes and variations. The remaining 5 control buttons are used for general functions including transport control, editing and bank / pattern selection.

Shape
Used to build and layer Euclidean patterns, create movement and adjust voicing

Groove
Composition timing and rhythmic feel

Tonal
Pitch & Scale

Setup
General MIDI & Track Configuration

shape

(1) steps   (2) pulses rotate   (3) cycles   (4) division

groove

(9) velocity probability   (10) sustain

tonal

(13) pitch harmony

setup

(15) length quantize   (16) tempo

(5) repeats offset   (6) time pace   (7) voicing style   (8) range phrase

(11) accent groove   (12) timing delay

(14) scale root

(17) channel output   (18) random rate

(19) /1   /2   /4   /8   /16   /32   /64

chrom   major   minor   penta   hira   iwato   tetra   user

(20)   /3   /6   /12   /24   /48   user

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(21)   (22) copy   (23) ctrl

clear

(24) bank   (25) pattern   (26) temp   (27) mute

save   select

Value Buttons
Used to access the 16 tracks and illuminate as visual representation of knob press functions.

General Buttons
Used for the 5 overall control, editing and transport functions.

Performance Buttons
2 buttons for on-the-fly variations and live performances.

Main functions are labelled in black and secondary functions in grey. Secondary functions are accessed by holding the **[CTRL]** button #23, in addition to the function. Other button combinations can be used to access various options. The value buttons are multifunctional and also illuminate, where the colour acts as a visual indicator when adjusting settings.

Shape

1 Steps
Euclidean pattern generator - number of steps.

2 Pulses / Rotate
Euclidean pattern generator - number of note pulses.
Secondary function sets / shifts starting point of pattern.

3 Cycles
Edit parameter lock automation settings.A cycle
contains a setting for each of T-1 parameters.

4 Division
Euclidean pattern generator - note interval value of each
step of the pattern.

5 Repeats / Offset
Number of note repeats added after each pulse.
Secondary function applies velocity ramp for repeats.

6 Time / Pace
Adjusts note interval value of repeats. Secondary
function adjusts repeat acceleration / deceleration.

7 Voicing / Style
Adjusts order of inserted notes in the pitch menu.
Secondary option for arpeggiator style.

8 Range / Phrase
Range of pitch modulation. Based on LFO's and shapes.
Secondary function to select modulation shape.

Groove

9 Velocity / Probability
Base velocity of notes. Secondary function adjusts the
note filter based on a chance.

10 Sustain
Note length adjustment.

11 Accent / Groove
Adds a velocity variation to notes. Secondary option
introduces a velocity groove character.

12 Timing / Delay
Microtiming asymmetrical stretch across the beat grid.
Secondary function introduces a +/- track 'delay' offset.

Tonal

13 Pitch / Harmony
Keyboard style pitch application and transposition of
notes. Secondary function for harmonic transposition.

14 Scale / Root
Scale of the track. Secondary function sets the root note.

Setup

15 Length / Quantize
Track and loop length. Secondary function for
quantization of current pattern with respect to transport.

16 Tempo
Project tempo from 24bpm - 280bpm, default 120bpm.

17 Channel / Output
MIDI Channel between 1-16. Secondary function,
'output' is not currently implemented.

18 Random / Rate
Randomization amount of parameters in the sequence.
Secondary function is sequence modulation playback rate.

Value Buttons

19 Top Row 1 - 8
Represent tracks 1-8 and illuminate to visualise
selected function. Functions are dependant on mode.

20 Bottom Row 9 - 16
Represent tracks 9-16 and illuminate to visualise
selected function. Functions are dependant on mode.

General

21 Play / Stop
Transport control for pattern.

22 Clear / Copy
Clear tracks, patterns or parameters. Copy using
secondary option.

23 Ctrl
Hold to access secondary options for other buttons.

24 Bank / Save
Selects bank view. Select bank with value button. Save
bank state using secondary function. Also used as the
Exit / Home function to revert to default mode.

25 Pattern / Select
Selects pattern view. Select pattern with value button.
Silently select pattern when using secondary function.

Performance Buttons

26 Temp
Hold and turn a parameter to temporarily change its value.

27 Mute
Hold along with a value button to mute the selected track.
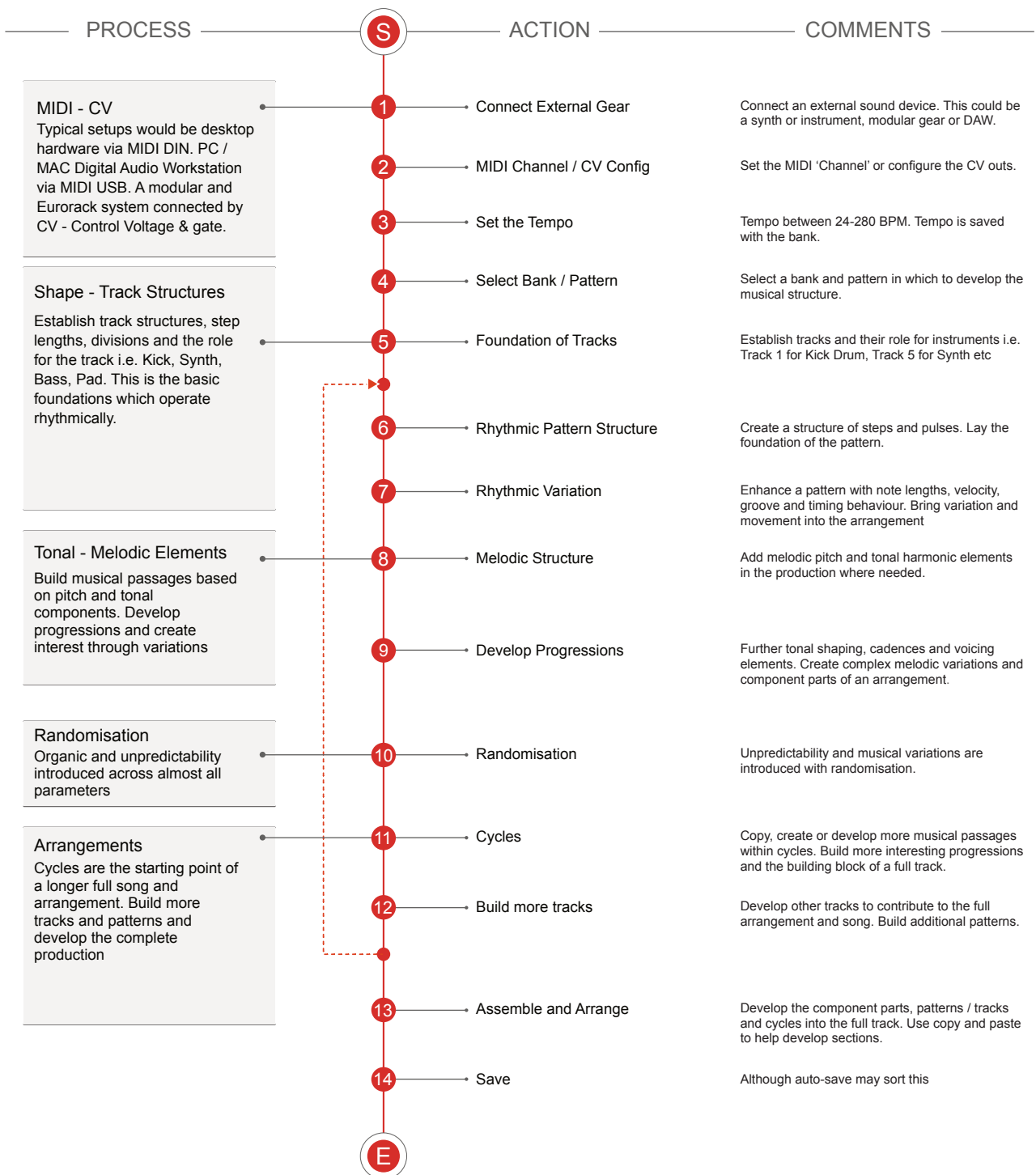
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1.5 First Steps

At this point its good to get hands on and to get creative. While this section will not go deep into any feature, it will help establish a starting point and build confidence by following a basic workflow in using the core T-1 Functions.

Some things should be initially considered prior to setting up T-1. These may need some thought initially but in the future will be a simple and embedded part of your own set up. The actual outcome will also depend on the synths and sounds used as the destination.

Example Workflow.

The workflow adopted with T-1 Sequencer will of course develop to fit your personal approach. To get started a typical journey is described below.

PROCESS		ACTION	COMMENTS
	S		
MIDI - CV Typical setups would be desktop hardware via MIDI DIN. PC / MAC Digital Audio Workstation via MIDI USB. A modular and Eurorack system connected by CV - Control Voltage & gate.	1	Connect External Gear	Connect an external sound device. This could be a synth or instrument, modular gear or DAW.
	2	MIDI Channel / CV Config	Set the MIDI 'Channel' or configure the CV outs.
	3	Set the Tempo	Tempo between 24-280 BPM. Tempo is saved with the bank.
	4	Select Bank / Pattern	Select a bank and pattern in which to develop the musical structure.
Shape - Track Structures Establish track structures, step lengths, divisions and the role for the track i.e. Kick, Synth, Bass, Pad. This is the basic foundations which operate rhythmically.	5	Foundation of Tracks	Establish tracks and their role for instruments i.e. Track 1 for Kick Drum, Track 5 for Synth etc
	6	Rhythmic Pattern Structure	Create a structure of steps and pulses. Lay the foundation of the pattern.
	7	Rhythmic Variation	Enhance a pattern with note lengths, velocity, groove and timing behaviour. Bring variation and movement into the arrangement
Tonal - Melodic Elements Build musical passages based on pitch and tonal components. Develop progressions and create interest through variations	8	Melodic Structure	Add melodic pitch and tonal harmonic elements in the production where needed.
	9	Develop Progressions	Further tonal shaping, cadences and voicing elements. Create complex melodic variations and component parts of an arrangement.
Randomisation Organic and unpredictability introduced across almost all parameters	10	Randomisation	Unpredictability and musical variations are introduced with randomisation.
Arrangements Cycles are the starting point of a longer full song and arrangement. Build more tracks and patterns and develop the complete production	11	Cycles	Copy, create or develop more musical passages within cycles. Build more interesting progressions and the building block of a full track.
	12	Build more tracks	Develop other tracks to contribute to the full arrangement and song. Build additional patterns.
	13	Assemble and Arrange	Develop the component parts, patterns / tracks and cycles into the full track. Use copy and paste to help develop sections.
	14	Save	Although auto-save may sort this
	E		

6 Steps To Creating A Drum Beat.

The objective is to create a simple kick, snare, hat drum loop. The sounds will be handled by a desktop drum synth, in this case Elektron's Digitakt but could equally be another device or DAW. The synth is connected by MIDI.

Step 1. Connect the Gear.

MIDI Config
The destination device must be configured to receive MIDI. Clock can be external from T-1 but Transport should be off, so that only T-1 controls the sequence. Device tracks and associated MIDI Channels should match with the sound required.

Track / Channels:-

Track 1, Channel 1 = Kick
Track 2, Channel 2 = Snare
Track 3, Channel 3 = HiHat
Track 4, Channel 4 = Bass

Audio Out
Connected from sound module to mixer, speakers or headphones.

MIDI In
Connected to sound module

MIDI Out
Using the 5 Pin to 3.5mm adapter
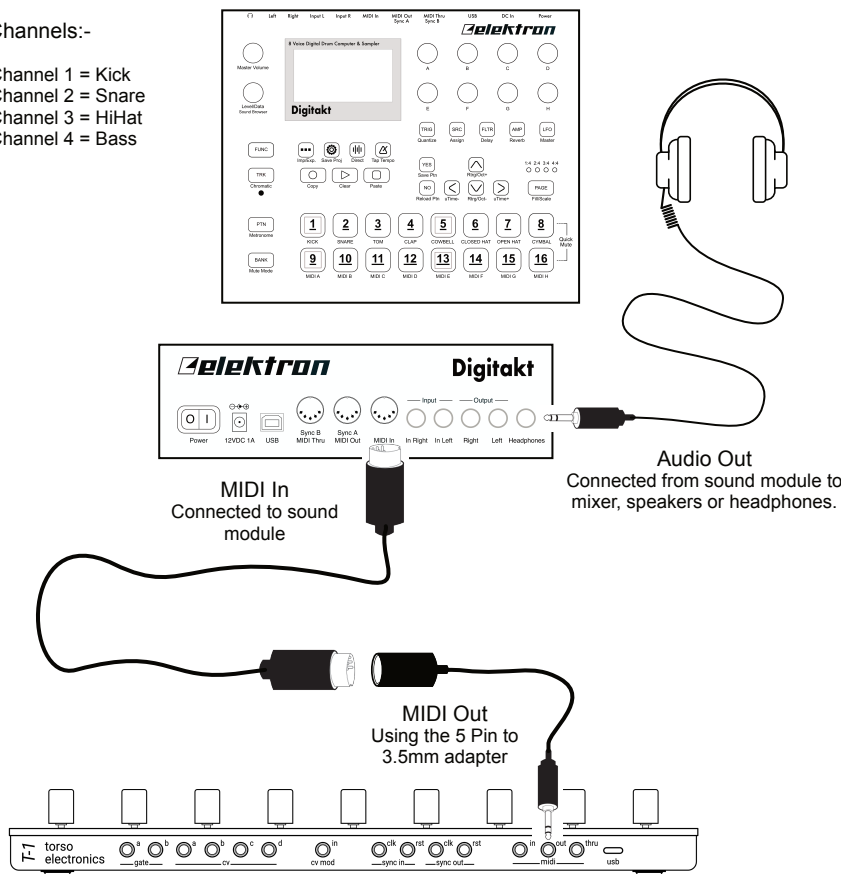
Track, Channels:-

Track 1, Channel 1 = Kick
Track 2, Channel 2 = Snare
Track 3, Channel 3 = HiHat
Track 4, Channel 4 = Bass
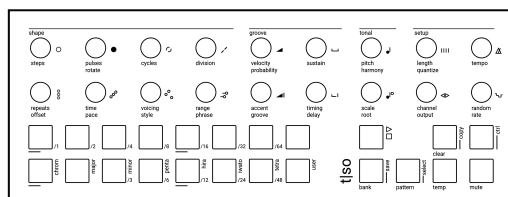
Step 2 - Scope Out The Idea and Objective

The musical objective could be a pre-prepared plan or a just an ad-lib. This step doesn't have to be formally documented and may just exist in your mind. However this is an example of the production considerations needed.
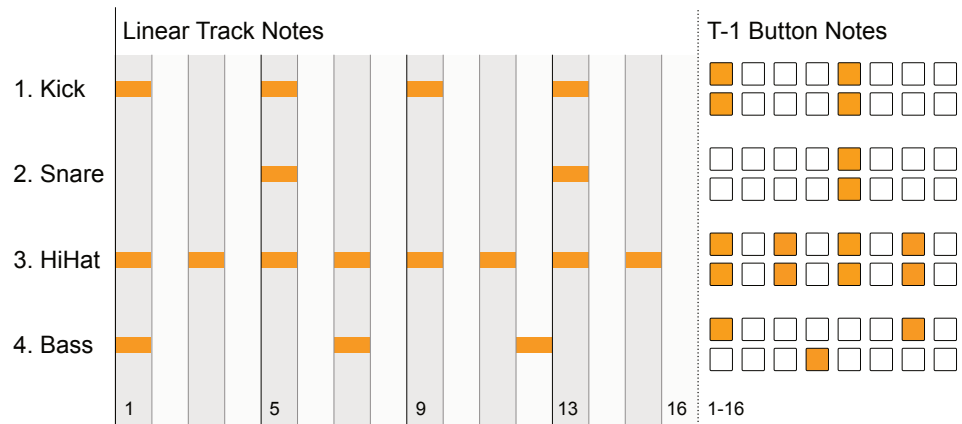
Sound	T-1 Track	MIDI Channel	Destination
Kick	Track 1	Channel 1	Digitakt Track 1 - 37 BD Weird
Snare	Track 2	Channel 2	Digitakt Track 1 - 35 SD Buggin
Hi Hat	Track 3	Channel 3	Digitakt Track 1 - 5 HH Digit
Bass	Track 4	Channel 4	Digitakt Track 1 - 73 Anasine
Bass Filter	Track 9	Channel 4	Digitakt CC #74

* Destination also refers to the Digitakt and Digitone factory presets

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Step 3. Creating a Kick Track

The first track will be the kick drum sequenced from T-1 and playing a
desktop drum synth. This could equally be a DAW. The Snare and HiHat to
follow on tracks 2 and 3 with a Bass stab on track 4.

▍ TRACK 1 - KICK

1. Select Track 1, Press the first value button **[VB1]**. The default mode is
    track view, if this is not visible, press **[BANK]** to select the default 'home'
    track view. Value button 1 will be lit ORANGE ■.

2. Ensure the track has 16 Steps. Press **(STEPS)** to view the value
    buttons. All should be lit to indicate 16 steps. The lit steps indicate
    number of steps selected. Turn **(STEPS)** to adjust the number.

3. Hold **(PULSES)** to temporarily view how many note events are selected.
    Active pulse step notes will be lit ORANGE ■.

4. Turn **(PULSES)** to add or remove the number of euclidean pulses. The
    euclidean sequencer will automatically distribute the number of note
    event pulses equally across the total number of steps. Add 4 pulses.

5. Ensure the MIDI Channel on T-1 matches the Kick drum channel on the
    destination device. Press **(CHANNEL)** to view the current track's MIDI
    channel. The selected channel will be lit WHITE ■. Turn **(CHANNEL)** to
    set the channel to 1, indicated by lit **[VB1]**, if not already set.

6. Press **[PLAY]**. The play button will flash indicating playback is active.
    The kick sound on the connected audio module should be triggered on
    the beat. T-1 will loop the 16 step playback.

Adjusting Parameters

When turning a parameter knob the value buttons will temporarily display
the current state across the value buttons. This is default behaviour but can
be changed in the T-1 Config misc page settings.

Step 4. Creating a Snare Track

The snare will follow similar principles as the kick. Manual pulse note events can be added as well as the automatic Euclidean sequenced notes.

▎ TRACK 2 - SNARE

1. Select Track 2, Press the second value button [VB2]. The default mode is track view, if this is not visible, press [BANK] to select the default 'home' track view. Value button 2 will be lit ORANGE ■.

2. Ensure the track has 16 Steps. Press (STEPS) to view the value buttons. All should be lit to indicate 16 steps. The lit steps indicate number of steps selected. Turn (STEPS) to adjust the number.

3. Double Press (PULSES) to view how many note events are selected. Double tapping the knob will retain the visual button view where single tap just temporarily displays the state.

4. Active step notes will be lit ORANGE ■. Instead of using the Euclidean pulse placement set the pulses manually. Tap value buttons [VB5] and [VB13] to manually place the pulses.

5. Ensure the MIDI Channel on T-1 for track 2 matches the Snare drum channel on the destination device. Press (CHANNEL) to view the current track's MIDI channel. The selected channel will be lit WHITE ■. Turn (CHANNEL) to change channel. Value button [VB2] should be lit for MIDI channel 2.

6. Press [PLAY]. The play button will flash indicating playback is active. The kick and snare sounds on the connected audio module should be triggered on the set pulse beats. T-1 will loop the 16 step playback. Track buttons will flash when a pulse is triggered.

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Step 5. Creating a Hi Hat Track

To create a natural sounding Hi Hat it is good to also apply a groove to vary the velocity applied on each pulse.

▌ TRACK 3 - HI HATS

1. Select Track 3, Press the third value button **[VB3]**. The default mode is track view, if this is not visible, press **[BANK]** to select the default 'home' track view. Value button 3 will be lit ORANGE ■.

2. Ensure the track has 16 Steps, although try other lengths to create interesting polyrhythms. Press **(STEPS)** to view the value buttons. All should be lit to indicate 16 steps. The lit steps indicate number of steps selected. Turn **(STEPS)** to adjust the number.

3. Double Press **(PULSES)** or Turn **(PULSES)** to view and set how many pulse note events are populated into the pattern. Active step notes will be lit ORANGE ■. The Euclidean pulse placement with 8 pulses selected will be spread evenly across the selected steps.

4. Ensure the MIDI Channel on T-1 for track 3 matches the Hi Hat drum channel on the destination device. Press **(CHANNEL)** to view the current track's MIDI channel. The selected channel will be lit WHITE ▫. Turn **(CHANNEL)** to change channel. Value button **[VB3]** should be lit for MIDI channel 3.

5. Press **[PLAY]**. The play button will flash indicating playback is active. The kick, snare and hi hat sounds on the connected audio module should be triggered on the set pulse beats. T-1 will loop the 16 step playback. Track buttons will flash when a pulse is triggered.

6. It is good to add some variation rather than a fixed level on the hats. Hold **[CTRL]** + Press & Hold **(GROOVE)**. Tap to select value button **[VB2]**. This will select 'groove' pattern 2 - Timbales.

7. To further develop the groove variation, Turn **(ACCENT)** to set the amount of velocity groove characteristic applied. It's good to apply a groove while playing.

Step 6. Creating a Bass Track

Although the Bass could be created in a melodic pattern, this example keeps the bass line a simple element that helps drive the percussion.

▌ TRACK 4 - BASS

1. Select Track 4, Press the fourth value button [VB4]. The default mode is track view, if this is not visible, press [BANK] to select the default 'home' track view. Value button 4 will be lit ORANGE ■.

2. Ensure the track has 16 Steps. Press (STEPS) to view the value buttons. All should be lit to indicate 16 steps. The lit steps indicate number of steps selected. Turn (STEPS) to adjust the number.

3. Turn (PULSES) to view and set how many note events are applied. Active step notes will be lit ORANGE ■. Euclidean pulse placement sets the pulses evenly. Turn until 3 pulses are applied to buttons [VB1], [VB7], [VB12].

4. Ensure the MIDI Channel on T-1 for track 4 matches the bass or any other melodic instrument, on the destination device. Press (CHANNEL) to view the current track's MIDI channel. The selected channel will be lit WHITE ■. Turn (CHANNEL) to change channel. Value button [VB4] should be lit for MIDI channel 4.

5. Press [PLAY]. The play button will flash indicating playback is active. The defined sounds on the connected audio module should be triggered on the set pulse beats. T-1 will loop the 16 step playback. Track buttons will flash when a pulse is triggered.

6. This is a more melodic rather than a beat driven track. It is possible to adjust the note duration using the (SUSTAIN) control if desired.

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7 Steps To Creating A Melody.

Objective. The objective is to build on the drum beat project and add more melodic elements. Also to include additional hardware in the process as a sound source. The melodic sounds will be handled by a desktop FM synth, in this case Elektron's Digitone but could equally be another device or DAW.

Step 1. Connect the Gear.

MIDI Config
The destination device must be configured to receive MIDI. The MIDI IN and Thru connections are used to ensure a single MIDI network with two devices controlled by T-1. Clock can be external from T-1 but Transport should be off, so that only T-1 controls the sequence. Device tracks and associated MIDI Channels should match with the sound required.

Audio Config
Both sound modules can be connected to a mixer and in turn to monitors or headphones.

Track / Channels:-

Track 1, Channel 1 = Kick
Track 2, Channel 2 = Snare
Track 3, Channel 3 = HiHat
Track 4, Channel 4 = Bass
Track 5, Channel 5 = Lead
Track 6, Channel 6 = Lead
Track 7, Channel 7 = Lead
Track 8, Channel 4 = CC Ctrl

MIDI In
Connected from drum
sound module

MIDI Thru
Connected from drum
to synth module

MIDI In
Connected to drum
sound module

MIDI Out
Using the 5 Pin to
3.5mm adapter
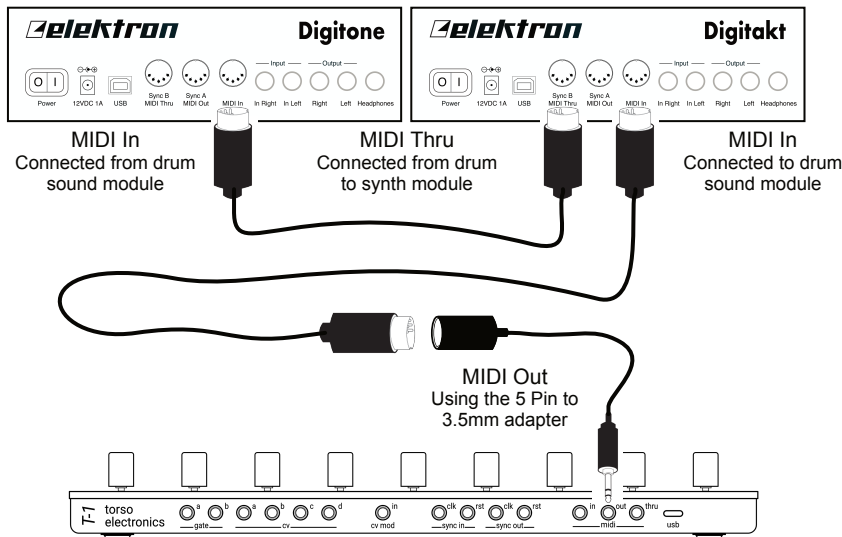
Track, Channels:-

Track 1, Channel 1 = Kick
Track 2, Channel 2 = Snare
Track 3, Channel 3 = HiHat
Track 4, Channel 4 = Bass
Track 5, Channel 5 = Lead
Track 6, Channel 6 = Lead
Track 7, Channel 7 = Lead
Track 8, Channel 4 = CC Ctrl
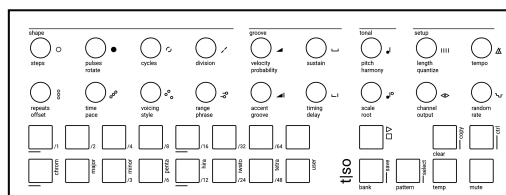
Step 2. Scope Out The Idea and Objective

Building on the drum beat a melody could consist of a lead line, pad, ambient drones, chimes etc. The options are many.

| Linear Track Notes | | | | | T-1 Button Notes |

5. Pluck					
6. Piano					
7. Chord					
9. Bass					
1	5	9	13	16	1-16
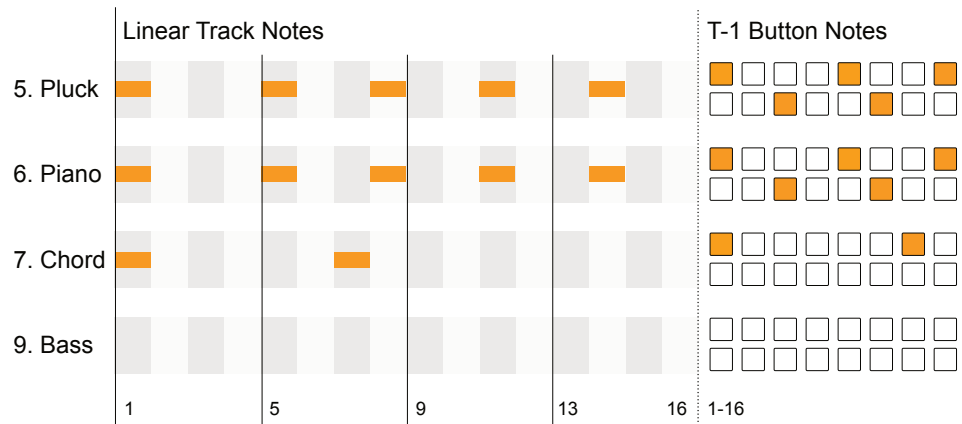
Sound	T-1 Track	MIDI Channel	Destination *
Bass Filter	Track 9	Channel 4	Digitakt CC #74
Plucky lead	Track 5	Channel 5	Digitone Track 1 - Plucky eA
Alt piano lead	Track 6	Channel 6	Digitone Track 2 - Epiano VGS JM
Chord stab	Track 7	Channel 7	Digitone Track 3 - Autochord SM

* Destination also refers to the Digitakt and Digitone factory presets

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Step 3. Creating a Plucky Lead

Track 5 will be the plucky lead sequenced from T-1 and playing to a desktop FM Synthesizer. This could equally be a DAW. Other melodic elements will follow.

▌ TRACK 5 - PLUCKY LEAD

1. Select Track 5, Press the fifth value button **[VB5]**. The default mode is track view, if this is not visible, press **[BANK]** to select the default 'home' track view. Value button 5 will be lit ORANGE ■.

2. Ensure the track has 16 Steps. Press **(STEPS)** to view the value buttons. All should be lit to indicate 16 steps. The lit steps indicate number of steps selected. Turn **(STEPS)** to adjust the number.

3. Press **(PULSES)** to view how many note events are selected. Active step note will be lit ORANGE ■. Double press to retain the pulse button view.

4. Turn **(PULSES)** to add or remove the number of steps. The euclidean sequencer will automatically distribute the number of note event pulses equally across the total number of steps. Add 5 pulses.

5. Ensure the MIDI Channel on T-1 matches the plucky lead channel on the destination device. Press **(CHANNEL)** to view the current track's MIDI channel. The selected channel will be lit WHITE ■. Turn **(CHANNEL)** to change channel. Set to channel 5, [VB5] lit.

6. Press **[PLAY]**. The play button will flash indicating playback is active. The plucky lead sound on the connected audio module should be triggered on the set beats. T-1 will loop the 16 step playback.

Step 4. Creating an Alternate Piano Lead

The piano lead will be a sound that follows the same pattern as the plucky lead. This can be played as an alternative or layered together.

▌ TRACK 6 - PIANO

1. Select Track 6, Press the sixth value button [VB6]. The default mode is track view, if this is not visible, press [BANK] to select the default 'home' track view. Value button 6 will be lit ORANGE ■.

2. Press & Hold [CTRL] + [COPY] + Tap [VB5]. Value button 5 will be lit GREEN ■. This signifies the track has been copied.

3. While still holding [CTRL] + [COPY], press [VB6]. Value button 6 will flash GREEN ■. This signifies the copied track has been pasted. Track 5 has effectively been replicated onto track 6.

4. Ensure the MIDI Channel on T-1 for track 6 matches the piano channel on the destination device. Press (CHANNEL) to view the current track's MIDI channel. The selected channel will be lit WHITE ■. Turn (CHANNEL) to change channel. Value button [VB6] should be lit for MIDI channel 6.

5. Press [PLAY]. The play button will flash indicating playback is active. The track sounds on the connected audio modules should be triggered on the set pulse beats. T-1 will loop the 16 step playback. Track buttons will flash when a pulse is triggered.

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Step 5. Creating a Pitch Based Chord Stab

So far all the notes and beats have been fixed to set notes. Pitch variations create a melody that can be expansive or simple loop. There are multiple methods that can be used to generate chords and melodies. This example keeps things simple but is a starting point for developing more elaborate melodies in future.

▌ TRACK 7 - CHORD STAB

1. Select Track 7, Press the seventh value button [VB7]. The default mode is track view, if this is not visible, press [BANK] to select the default 'home' track view. Value button 7 will be lit ORANGE ■.

2. Ensure the track has 16 Steps, although try other lengths to create interesting polyrhythms. Press (STEPS) to view the value buttons. All should be lit to indicate 16 steps. The lit steps indicate number of steps selected. Turn (STEPS) to adjust the number.

3. Double Press (PULSES) to view and set how many pulse note events are populated into the pattern. Active step notes will be lit ORANGE ■. Manually enter note pulses on step [VB1] and [VB7].

4. Ensure the MIDI Channel on T-1 for track 7 matches the chord sound channel on the destination device. Press (CHANNEL) to view the current track's MIDI channel. The selected channel will be lit WHITE ▢. Turn (CHANNEL) to change channel. Value button [VB7] should be lit for MIDI channel 7.

5. Press [PLAY]. The play button will flash indicating playback is active. It is easier to tweak and adjust by ear on setting some parameters.

6. Double tap (CYCLES). The first 4 value buttons will be lit. The default starting point is 4 cycle slots. Cycles are iterations of the pattern when different parameters can be set. A flashing value button indicates the selected cycle. A WHITE ▢ value button indicates the playing cycle. If no cycle is selected the following changes will affect all cycle slots.

7. Double tap (PITCH). The chromatic keyboard will display on the value buttons. The active note will be already selected and lit ORANGE ■.

8. To create a chord, Press the value buttons to add notes that contribute. Only available notes in the scale are lit. Turn (SCALE) to change the scale if required. Press [VB11] & [VB13] to add to [VB9] and create a C Major Chord, CEG Triad on the white keyboard notes.

NOTES

9. Double Press **(CYCLES)** to return to the cycles view. The first 4 value buttons will be lit. The default starting point is 4 cycle slots.

10. While still viewing the **(CYCLES)** setting, Press **[VB2]** to select.

11. Turn **(VOICING)** to change the chord on the selected cycle. The voicing page will be displayed while adjusting.

12. When the Cycle view returns, A RED ■ value button will indicate that the cycle slot has been edited and contains changed values. The **[BANK]** button also flashes RED ■ to indicate edit mode.

13. A cycle can be cleared by Holding **[CLEAR]** + **[VBx]** for the cycle

14. By iterating through steps 9-13 chord progressions can be created.

15. When satisfied with a chord progression, press **[BANK]** to leave edit mode and return to home view.

16. Try adding different chords with **(PITCH)**. Also try adjusting **(RANGE)** and experiment with **(STYLE)** and **(PHRASE)**.

17. In home view, Press **[CTRL]** + **[SAVE]** + **[VBx]** Value button of the bank followed by [VBx] value button of the Pattern. Saving regularly throughout developing a project is a good habit to get into.

18. Other variations of the chord can be created in each cycle slot. It is also possible to copy cycles, example by holding **[CTRL]** + **[COPY]** + **[VB1]** to copy and while holding **[CTRL]** + **[COPY]**, press the destination slot i.e. **[VB2]**, **[VB3]** etc.

1 Getting Started

Step 6. Control Change Messages

T-1 Can also perform control changes to external parameters on compatible devices. These CC messages are set on a T-1 CC Track as opposed to a normal note track. This example controls the filter cutoff for the bass sound in the Digitakt.

▌ CONTROLLING AN EXTERNAL SYNTH PARAMETER

1. Select a new CC track, Press **[CTRL]** + **[VB9]** for Track 9. This will be lit CYAN ■. The commands cycle between track modes.

2. Set the channel for the Bass sound by holding and turning **(CHANNEL)**. This should be channel 4, i.e. value button 4 lit.

3. Digitakt filter cutoff is CC#74. Check the actual device you use for the MIDI Mappings to determine the representation for the specific device.

4. By default, the **(VELOCITY)** knob represents CC#74. When on Track 9 this parameter can be changed which will transmit the value change to the destination device.

5. When playing the song arrangement the **(VELOCITY)** knob will change the bass filter cutoff value. This example is based on a manual control action to change the parameter.

Step 7. Mutes for Ad Libs

Muting and unmuting tracks is a technique often used in ad-lib live performances for improvisation and for developing arrangements on-the-fly.

▌ MUTING TO BUILD AN ARRANGEMENT

1. Press **[MUTE]** + **[VBx]** where 'x' is the selected track. This will mute or unmute the track.

2. Muting or Unmuting is applied to the track ONLY when the **[MUTE]** button is released.

3. Try muting all tracks with the exception of the Kick and Snare tracks 1 and 2. Muted tracks will be lit solid BLUE GREY ▮, while unmuted playing tracks will flash in the colour of the track type if selected or white if not selected.

4. Increase the bass cut off as the song develops and unmute the synth tracks in order at the end of each bar. Unmute the hi hat track to add some momentum.

5. Muting and unmuting across a fixed length passage can create a live improvisation, Ideal for live sessions or ad lib jamming.

2

Generic Setup

T-1 brings a new dimension into the world of audio production and make no mistake is a unique yet comprehensive device. There are so many features that may seem less obvious to producers when comparing with more traditional sequencers. The overall structure of T-1 at first glance, can appear daunting. However spending a little time to understand the overall architecture and its terminology, some common functions and pre-requisite connections will set a good foundation. For this reason there are no apologies for taking time to get intimate with the architecture of the overall device and in bringing this summary upfront in this guide. Getting a solid understanding and taking a holistic view of the T-1 Sequencer's structure and features will help enormously in getting to grips later with the detailed parts of the device. Think of the three basic elements when using T-1. Firstly the T-1 device itself which is setup to control and sequence.

Secondly the destination instrument which T-1 will control and modulate. Typically this will be a synthesizer, drum machine or sound module or maybe a mix of many. It could also be a PC / Mac software instrument. Thirdly, consider the connection between the devices. For Eurorack the CV and Triggers are a typical choice, while a USB connection is more common for PC / Mac and MIDI DIN for desktop devices. Remember if using the T-1 USB MIDI connection, this will also be the power source for the T-1. While a deeper dive into the detail of specific functions and features is covered in the latter parts of this notebook, the overall structural foundation and common topics are laid out in this section. In summary, this section is more about structure than creative pattern development. It is therefore worth the investment of time and focus in understanding the hierarchy and the generic features in order to get the most out of T-1.

2 Generic Setup

2.1 Glossary of Terms

While you may think this should be hidden at the back of this book, understanding terminology often used in the context of general audio production topics and specifically when using the T-1 sequencer will help unlock it's power and performance. It makes sense to become familiar early with these terms to speed up learning and to get the most out of the T-1 user experience and workflow.

Ableton Link: Ableton are a DAW developer who introduced the link technology which enables communication between multiple, separate audio devices across a WiFi network.

Arpeggiator: A function that automatically generates ordered sub patterns using a group of triggered notes.

Beta: A term normally used for pre-release software versions used for testing purposes.

Bank: An element that acts as a container to help organise and store the 16 patterns. T-1 has a maximum of 16 banks available.

Channel: In T-1 the channel refers to the MIDI communication channel. This ranges from 1-16.

Control Change. A MIDI standard message which is applied to change parameter settings. Also called CC.

Control Voltage. An analog signal used to control parameters and affect their values. Used for modulation and control, commonly found in modular rack systems. Also called CV.

Cycles: A cycle is parameter automation that would be applied to introduce track variations and changes. A collection of parameter settings are stored together in a cycle with up to 16 cycles available in each track

Denmark: Country in the Northern European area of Scandinavia. It's capital is Copenhagen. Famous for innovation, high quality design and mermaids. Also the home of Torso Electronics, creators of T-1.

Euclidean Rhythm: An algorithm that generates a note pattern based on mathematical calculations. In T-1 this uses steps, pulses, rotation / start and division as the parameters to set.

Eurorack: The most common standard of modular synthesis which comprises of discrete functions rack mounted and connected together with CV / Trigger patch cables. Buchla is another alternative modular standard.

Gate: An on/off signal that activates a function. Used interchangeably with 'trigger', although gates usually activate over longer periods for example as a note on.

LFO: Low frequency oscillator which is a control signal specifically used for modulating parameters.

MIDI: MIDI stands for Musical Instrument Digital Interface and is a standard protocol used for communicating between audio equipment. MIDI is normally applied using USB or using a 5 Pin MIDI DIN. Both are available in T-1 using the USB-C connection or the 5 Pin to 3.5mm adapter.

Modulation: The process of controlling and manipulating one parameter from the control of another. This typically allows variations and movement to be added to a function.

Monophonic: A mode which allows only the playing of one note at a time.

Mute: Muting offers variations that can be created by silencing tracks and patterns especially useful when playing live sets.

Note: A musical note is triggered by the sequencer pattern steps and controls and instruments note.

OS: Operating System is the core firmware that makes T-1 Sequencer work and manages how it operates.

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

Pattern: This is the backbone and core of a T-1 sequence and contains one set of steps that forms a melody or beat.

Perform: A mode in T-1 which supports muting and temporary variations through use of two buttons. Ideal in a live environment and to introduce improvisations.

Pitch: The audio frequency of notes that determines its sound within a musical range.

Polyphony: The ability to play multiple notes simultaneously on an instrument. For example to play chords.

Polyrhythm: Two or more rhythms running concurrently in the same cycle but with different beats or subdivisions

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

Probability: The determination of whether an action will occur or not. In a generative sequencer this can add interest and randomisation.

Program Change. A MIDI standard message which is applied to change banks or patches of a device. Also called PC.

Pulse: Used in T-1 Euclidean pattern generation to trigger a note event. This is generally positioned on a step but can also be expanded further, for example by adding note repeats.

Root note: In musical terms this is a single note used as the starting reference in an harmonic scale. Typically a root note would be the lowest note in a chord.

Sequencing: The process of creating a series of actions such as note triggers or parameter changes to create melodies or drum beats.

Step: A step is a building block in a pattern structure. A series of steps would form a pattern where note events i.e. pulses can be selectively placed to form a melody or beat.

Synchronization: In the context of connected audio gear, sync or synchronization refers to how the clock timing is aligned between multiple devices. Typically one device would lead as a primary clock and other devices would follow. This is commonly managed using MIDI or CV Clocks.

T-1: An algorithmic sequencer that generates patterns and melodies that control other audio gear in a generative and fluid style.

T-1 Config: A Mac or PC based software tool to help configure the T-1 Sequencer. Important for firmware updates and I/O configuration.

Tempo: The speed at which the overall sequence runs, based on a standard measure of beats per minute. T-1 operates between 24 - 280 BPM.

Transport: A term often used to refer to the collective controls for play, stop, record, pause where available within in systems.

Track: A T-1 Sequencer pattern contains 16 tracks. Tracks help manage the structure and length of a sequence. Typically tracks contain steps and would each be used for individual instruments, e.g. Drum, Percussion, Bass, Pad etc.

Transpose: To change the pitch for a range of notes. Notes can be transposed up or down a defined octave range. Can also refer to adjustment up or down for a range of notes on a keyboard.

Trigger: An on/off signal that activates a function. Used interchangeably with 'gate', although triggers usually are shorter pulses for example to trigger a short drum hit.

Quantization: The alignment of musical elements to a defined grid or timing structure.

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

Velocity: A function which measures how hard a note is played and modulates sound accordingly. For example hard played notes may sound louder than softly played notes on a piano.

2 Generic Setup

2.2 Architecture

T-1 Sequencer

16 Banks are available from within T-1 Sequencer

Bank [1] ... Bank [16]

Bank

16 Patterns are available in each Bank

Pattern [1] ... Pattern [16]

Tempo

Tempo bound to active Bank

Pattern

Each Pattern hosts 16 Tracks
Options for Note, CC, FX Track Modes

Track [1] ... Track [16]

Quantize

Quantize bound to active Pattern

Track

Each Track hosts 16 Cycles

Cycle [1] ... Cycle [16]

Length

Length bound to active Track

Cycle

A Cycle is a collection of the T-1 parameter settings

Sequencer Engine | Setup | Random

Gate / Trigger

Euclidean Engine
- Steps
- Pulses
- Rotate
- Division

Note Repeater
- Repeats
- Time
- Pace

Groove
- Sustain
- Timing
- Delay

Velocity

Groove
- Velocity
- Accent

Note Repeater
- Offset

Pitch

Tonal Base
- Pitch
- Harmony
- Scale

Tonal Shaper
- Voicing
- Range

(+)

Sequence

2.3 Functional Relationship

The sequencer engine and the musical parameter settings operate together with dependencies that help create complex and advanced rhythmic and melodic sequences with an almost endless number of options.

Think of the first steps being the creation of rhythmic patterns, mainly generated by the Euclidean sequencer. These patterns trigger notes.

Develop the pattern even further with advanced variations and multiple modulation options to create and elevate expressive arrangements.

Build on top with the pitch based features to develop beyond a pure rhythmic pattern into a melodic sequence and progressions. Go even further towards the generative and organic structures and build live performances which include randomisation.
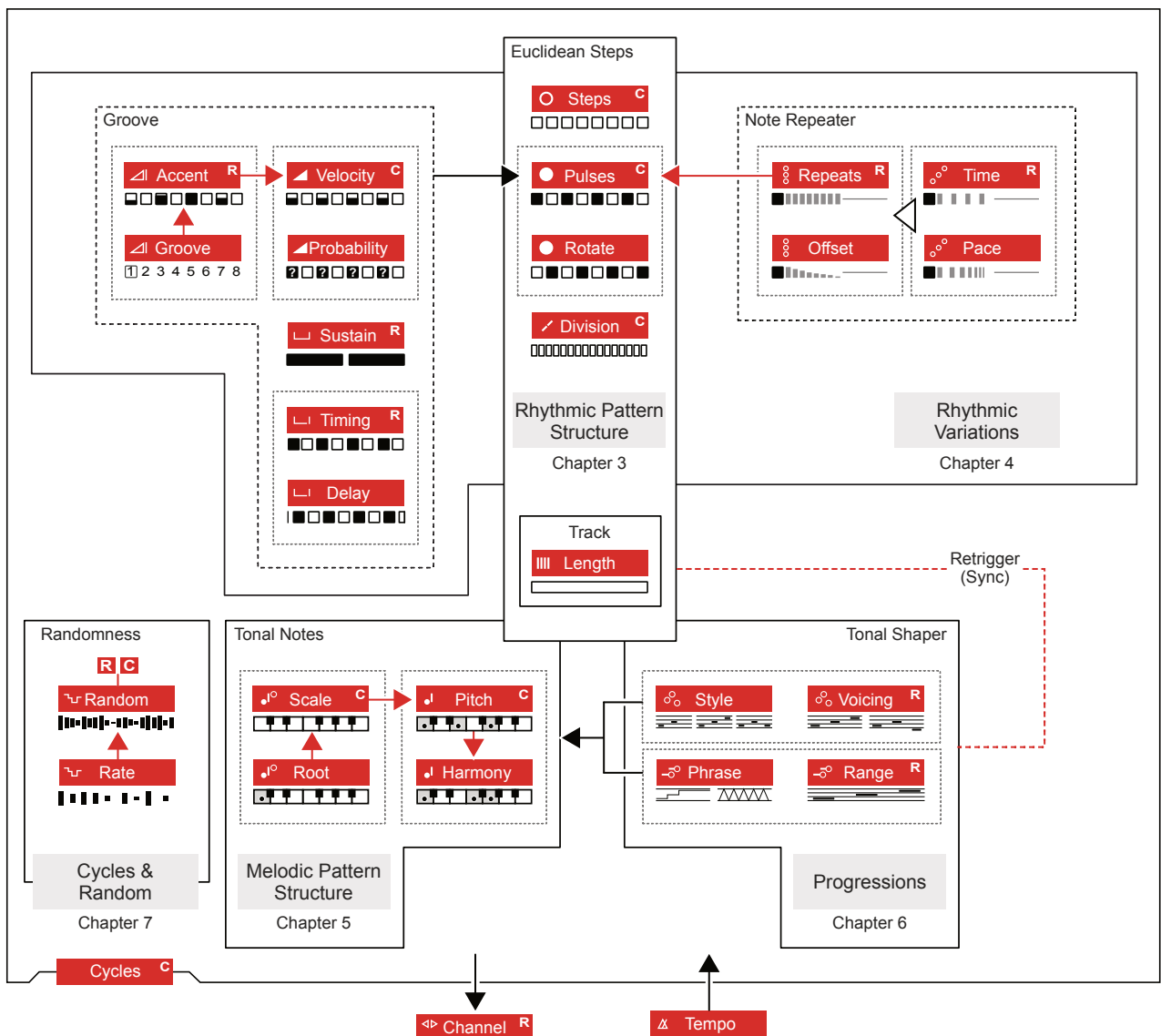
2 Generic Setup

2.4 Control Overview

T-1 consists of 18 Rotary / Push knobs and 23 pad buttons.
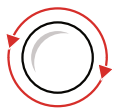
The control knobs are endless encoders with a 'click' on rotation that adjusts the designated parameter. For example 1 click will change by +/-1BPM with Tempo. White labels indicate the primary function. Grey text below indicates the secondary function accessed by using [CTRL] + (Knob).

Pressing a knob will display the designated parameter state as shown on the illuminated buttons. Also Turn to adjust while viewing the parameters setting. This behaviour can be changed in config settings.

Quickly, double press a control knob to lock the designated parameter setting display on the value buttons button. This will release when the same knob is pressed again.

Buttons are pressed to select functions. The colour of the button illumination will determine the state of the designated function. Colours will change depending on the context and mode in currently in operation.

save

bank

Pressing the [BANK] button in any mode will revert to the 'home' tracks view mode. This is like a 'go back' feature as an additional function for the banks button in addition to selecting a bank.
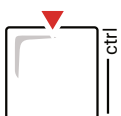
ctrl

The [CTRL] button is held with other functions in order to access the secondary function.

The button illumination state and colour will reflect the current mode. The 16 Value buttons act as visual feedback indicators to display available options and settings specific to the mode selected.

▷
□
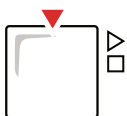
1. Press [PLAY] button will play or stop the pattern. The button will flash white every quarter note when playing. Button is orange if a Link session is connected and synchronised.
2. Press [CTRL] + [PLAY] excludes MIDI devices, Link send and analog reset commands.
3. Hold [CLEAR] + [PLAY] to kill any stuck MIDI notes.

2.5 Banks.

Banks are used to organise patterns and are the highest level of order in the T-1 structure. T-1 has a total of 16 Banks which operate like folders, each bank storing up to 16 patterns. With a total of 256 patterns available in T-1, banks simplify the organisation of patterns and their access.

The 16 Banks are represented by the 16 Value buttons and are directly linked to the associated library of patterns.

save
bank

Hold [BANK] to view the currently active bank and other available banks, [BANK] will illuminate GREEN ▪.

The value button of an edited but unsaved bank will illuminate PINK ▪.

The value button of the currently active bank will illuminate WHITE ▫ or Bright PINK ▪
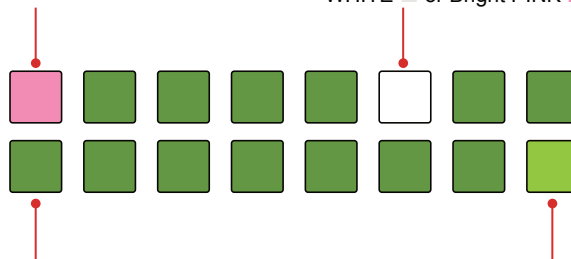
The value button of an empty bank will illuminate DARK GREEN ▪.

The value button of an edited and saved bank will illuminate GREEN ▪.

Value buttons are numbered left to right, top row 1 - 8, and bottom row 9 - 16.

TRACK View - Default 'home' View
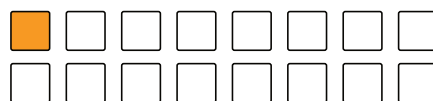
Default 'Home' view in T-1 at power up or after pressing [BANK] to the track view. The currently active track is illuminated ORANGE ▪ for note tracks, CYAN ▪ for CC tracks, MAGENTA ▪ for FX tracks.

BANK View

Hold [BANK] to display bank view. The value buttons will mainly be lit DARK GREEN ▪.

PATTERN View
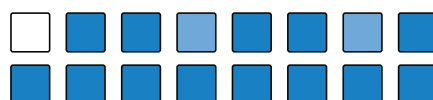
While still holding [BANK] after selecting a bank, the pattern selection page is presented, mainly illuminated DARK BLUE ▪.

2 Generic Setup

Banks and patterns can be selected within the same process. After selecting a bank, the pattern selection option is automatically presented. Bank and pattern numbers are represented by the value buttons 1-16. T-1 will also auto save it's state but it is good workflow practice to manually save when building and developing sequences.

SELECTING A BANK AND PATTERN

1. Select a bank. Hold **[BANK]** + **[VBx]**, where 'x' is the bank to select. Banks are represented by the 16 value buttons. Keep **[BANK]** Held through steps 1-3 of this process.

    • Currently selected, saved bank is WHITE ▢. If unsaved the button may be lit Bright PINK ▮.

    • Available saved banks are GREEN ▮ and empty bank slots are illuminated DARK GREEN ▮.

2. While still Holding **[BANK]**, Press **[VBx]**, where 'x' is the pattern to select within the previously selected bank. Value buttons represent patterns.

    • Currently selected pattern is WHITE ▢.

    • Available empty pattern slots are DARK BLUE ▮ and edited pattern slots are illuminated BLUE ▮.

    • The pattern pending play is illuminated WHITE ▢. This is often also the currently active pattern.

3. If the sequence is playing, the new pattern will be queued to change at the end of the current pattern. If the sequence is not playing the pattern is simply selected for editing.

4. Once the bank and pattern is selected release the **[BANK]** button.

SAVING A BANK

1. Edited, unsaved banks will illuminate PINK ▪ and in addition, will also flash if the pattern if playing when holding [BANK].

2. To save a bank. Hold [CTRL] + [BANK] + [VBx], 'x' is the bank to save.

3. The bank and value button will flash pink indicating the bank is saved and then turn green or white if it is the selected bank.

4. Release the buttons once save is complete.

RELOADING FROM A SAVED BANK

1. Hold for 1 second, [BANK] + [VBx], where 'x' is the current bank to reload and is represented by value buttons 1-16.

2. The value button will flash green.

3. The previously saved bank in the slot is reloaded.

4. All banks are reloaded at once when the T-1 is powered up while holding [BANK].

SELECTING A PATTERN

2. Hold [PATTERN] + [VBx], where 'x' is the pattern to select within the current bank. Value buttons represent patterns.

   • Currently selected pattern is WHITE ▪.

   • Available empty pattern slots are DARK BLUE ▪ and edited pattern slots are illuminated BLUE ▪.

   • The pattern pending play is illuminated WHITE ▪. This is often also the currently active pattern.

3. If the sequence is playing, the new pattern will be queued to change at the end of the current pattern. If the sequence is not playing the pattern is simply selected for editing.

4. Once the pattern is selected release the [PATTERN] button.

2 Generic Setup

2.6 Tempo

The tempo is measured in Beats Per Minute ranging between 24 BPM and 280 BPM. Tempo is a generic parameter, operating across all patterns and tracks in a bank. The tempo setting is saved within the bank.

▌ VIEWING THE TEMPO

1. Hold **(TEMPO)**. Double Press **(TEMPO)** will lock the tempo view.

2. The value buttons will display the tempo status. The tempo setting is shown as BLUE GREY ■ on the value buttons and DIMMED BLUE ■.

MIN   BLUE GREY ■   DIMMED BLUE ■
24 BPM   Tempo Setting   Granular increments

| 24 | 56 | 72 | 88 | 104 | 120 | 136 | 152 |

| 168 | 184 | 200 | 216 | 232 | 248 | 264 | 280 |

The value buttons will display incrementally in shades of white and blue to represent the tempo.

MAX
280 BPM
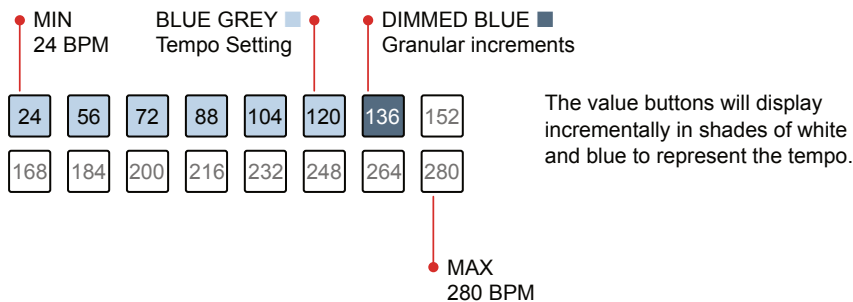
▌ CHANGING THE TEMPO

1. To change tempo in 1 BPM increments. Turn **(TEMPO)**. Each knob click rotation represents 1 BPM. To view and adjust, Hold & Turn **(TEMPO)**.

2. To change tempo in 16 BPM increments. Hold **(TEMPO)** + Press **[VBx]** where 'x' is a value button. The first value button is set to the minimum 24 BPM state and the last button 280BPM.

3. The value buttons will display the tempo status. The tempo setting is shown as DIMMED BLUE ■ and the BLUE GREY ■ shaded value buttons.

4. As a quick reset to 120 BPM, Hold **(TEMPO)** + **[VB6]**.

2.7 Clear and Copy Bank

There are two editing options that can be applied to multiple T-1 functions. Copy can be used to duplicate elements such as banks, tracks and patterns while clear will reset to an empty or default state. The [CLEAR] button will be used in conjunction with another function and additionally [CTRL] is used when accessing [COPY]. Examples are shown for banks.

▎ CLEARING A BANK

1. Hold **[CLEAR]** + **[BANK]** + **[VBx]**, where 'x' is the existing saved bank to clear represented by value buttons 1-16. Keep **[CLEAR]** + **[BANK]** Held through the process.

2. The value button will flash. Release **[CLEAR]** + **[BANK]** to exit without clearing at this point.

3. With **[CLEAR]** + **[BANK]** still held, press **[VBx]** again to confirm clear.

4. The selected bank is cleared. Clear will permanently remove the banks and cannot be undone. Unsaved, empty banks are already empty and cannot therefore be cleared.
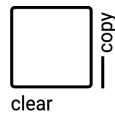
Hold [CLEAR] + Target, when using the clear option.
Target is the function to clear.

▌ COPY / PASTE A BANK

1. Hold **[CTRL]** + **[COPY]** + **[BANK]** + **[VBx]**, where 'x' is the source bank to copy. Banks 1-16 represented by value buttons.

2. The value button will slowly flash to indicate copy to the clipboard memory. Keep holding **[CTRL]** + **[COPY]** + **[BANK]**.

3. While Holding **[CTRL]** + **[COPY]** + **[BANK]** + Press **[VBx]**, where 'x' is the destination bank into which to paste the previously copied bank.

4. The value button will quickly flash to indicate the bank has been pasted from the clipboard memory. Multiple pastes are possible.

5. Release the buttons.

Hold [CTRL] + [CLEAR] + Source bank, to copy.
Still Holding [CTRL] + [CLEAR] + Destination, to paste.

NOTES
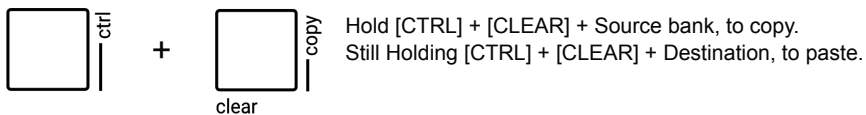
2.8 Clipboard

The clipboard option allows copying of tracks, parameters and patterns. This is especially useful for copying tracks and parameters between patterns and banks and patterns between banks. While the clipboard is populated the [CLEAR] option does not perform the default clear command but is used to paste clipboard elements.

▌ COPY TO THE CLIPBOARD

1. Hold [CTRL] + [COPY] + Double Press the item to copy to the clipboard.

    •   Double tap a (**Knob**) for a parameter to copy. The [**CLEAR**] button will illuminate GREEN ■ to signify the clipboard holds a parameter.

    •   Double tap [**VBx**] in track view to copy a track. The 'x' represents the value button of the track. The [**CLEAR**] button will then illuminate GREEN ■ to signify the clipboard holds a track.

    •   Double tap [**VBx**] in pattern view to copy a pattern. The 'x' represents the value button of the pattern. The [**CLEAR**] button will then illuminate BLUE ■ to signify the clipboard holds a pattern.

2. Double tap [**CLEAR**] if required to empty the clipboard.

▌ PASTE FROM THE CLIPBOARD

1. Ensure the item to paste has already been copied to the clipboard. The [**CLEAR**] button will be lit GREEN ■ or BLUE ■ to signify that the clipboard is populated.

2. Hold [**CLEAR**] + Press [**VBx**] for the destination to copy into.

    •   Press [**VBx**] in track view to paste to a track. The 'x' represents the value button of the track. The [**VBx**] button will then flash GREEN ■ to signify the track has been pasted from the clipboard.

    •   Press [**VBx**] in pattern view to paste to a track. The 'x' represents the value button of the pattern. The [**VBx**] button will then flash GREEN ■ to signify the pattern has been pasted from the clipboard.

3. Multiple pastes can be applied while ever the clipboard is populated.

4. Double tap [**CLEAR**] if required to empty the clipboard.

2 Generic Setup

2.9 Command Quick Reference

Function	Action	T-1 Sequencer Command	Description
General	Play / Stop	Press [PLAY]	Press the play transport button to play or stop a sequence.
General	Play - No MIDI	Hold [CTRL] + Press [PLAY]	Play without sending Start / Stop for MIDI, Link, Analog reset.
General	Exit - Home	Press [BANK]	Press quickly to exit the current mode and return 'home'. This is the track view also the mode selected on start up.
General	Secondary Option	Hold [CTRL] + Button or + Knob	Selects the secondary function of the control, labelled in grey
General	Various	Hold [VBx] + [VBx]	Multiple selections can be made using the value buttons
General	Lock display	Double Press Knob	Where a visualisation on the value buttons exists, double press the parameter knob will lock it's value button display.
General	Absolute Edit	Hold (Knob) + [VBx]	Change parameter absolutely for track. Use [PATTERN] + (Knob) + [VBx] to change across all tracks
General	Relative Edit	Turn (Knob)	Change parameter relatively for track. Use [PATTERN] + Turn (Knob) to change across all tracks
General	Clear	[Clear]	Clears various functions including tracks, patterns and parameters. Hold along with function to clear.
General	Copy	[Ctrl] + [Clear]	Copies various functions including tracks, patterns and parameters. Hold [Ctrl] + [Copy] + function to copy.
Bank	View Banks	Hold [BANK]	Value buttons will display state by their illumination colour.
Bank	Select Bank	Hold [BANK] + Press [VBx]	Selects a bank 'x' - pattern selection automatically follows
Bank	Save Bank	Hold [CTRL] + [BANK] + [VBx]	Saves the edited, selected bank 'x'
Bank	Reload Bank	Hold [BANK] + [VBx] for 1 Sec	Reload previously saved stave for bank 'x'
Bank	Clear Bank	Hold [CLEAR] + [BANK] + [VBx]	Clears bank 'x'. [VBx] again to confirm.
Bank	Copy Bank	[CTRL] + [COPY] + [BANK] + [VBx]	Copy from 'x' source into 'x' destination. Keep 3 buttons held and value button to copy and then value button to paste into.
Pattern	Clear Pattern	[CLEAR] + [PATTERN] + [VBx]	Clears pattern 'x'
Pattern	Copy Pattern	[CTRL] + [COPY] + [PATTERN] + [VBx]	Copy from 'x' source into 'x' destination. Keep 3 buttons held and value button to copy, then value button to paste into.
Pattern	Select Pattern	[PATTERN] + [VBx]	Select a pattern from within the existing bank.
Pattern	Chain Patterns	Press [VBx] + [VBx] + etc	Select, in order, the patterns to play in a chained series
Track	Select Track	Press [VBx]	In 'Home' track view, to select one track.
Track	Multi Track Select	Press [VBx] + [VBx] + etc	In 'Home' track view, simultaneously select multiple tracks.
Track	Track Type	Press [CTRL] + [VBx]	Cycle between Note, CC Track and FX Track
Track	Switch Pulse View	Double Tap [VBx] for Note Track	Switch from note track to pulse view.
Track	Switch CC View	Double Tap [VBx] for CC Track	Switch from CC Track view to CC Sequencer view
Track	Switch FX View	Double Tap [VBx] for FX Track	Switch from FX Track view to chromatic keyboard view
Track	Mute / Unmute	[MUTE] + [VBx]	Mute and unmute tracks. Muting takes place when the mute button is released.
Track	Quick Mute	[CTRL] + [MUTE] + [VBx]	Mute and unmute tracks. Muting takes place immediately when the buttons are pressed.

Function	Action	T-1 Sequencer Command	Description
Steps	View Steps	Hold (STEPS)	Sequencer view - display steps value button page.
Steps	Edit Steps	Turn (STEPS)	Adjust Euclidean step count up to 16 steps. Also Press & Turn to change while visualising.
Steps	Edit Steps	Hold (STEPS) + Press [VBx]	Adjust step count while visualising step sequencer view.
Steps	Extend Steps	Hold [CTRL] + Turn (STEPS)	Adjust the step count beyond 16 and up to 64 steps distributed as 16 steps per page, max 4 pages.
Steps	Step Pages	Hold [CTRL] + Button	In step sequencer view. Bank, Pattern Temp, Mute buttons represents each step page 1,2,3 and 4 respectively.
Steps	Retrigger Step	Press [CLEAR]	Apply a retrigger step when in step view. Resets sequence parameters
Pulses	View Pulses	Hold (PULSES)	Display pulses sequencer view, value button page
Pulses	Edit Pulses	Turn (PULSES)	Adjust Euclidean pulse count and population while visualising pulse sequencer view. Also use Press & Turn.
Pulses	Manual Pulses	Press [VBx]	Pulse sequencer view, press value buttons to select / deselect pulses. Not affected by Euclidean edits.
Pulses	Step Edit Mode	Press [CTRL] + [VBx]	Step edit view, to select / deselect step editable pulses and turn (knob) to lock one or more parameters to a step.
Pulses	Step Edit Exit	Press [BANK]	Exit step edit view and edit mode.
Pulses	Rotate	Hold [CTRL] + Turn (PULSES)	Rotate pattern track start point.
Pulses	Note Length	Turn (SUSTAIN)	Adjust note length with respect to division.
Division	Edit Note Division	Turn (DIVISION)	Adjust the time signature division for the track pattern.
Division	Edit Note Division	Press & Turn (DIVISION)	Adjust the time signature division for the track pattern while viewing the value button division status
Division	Edit Note Division	Hold (DIVISION) + Press [VBx]	Adjust the time signature division for the track pattern while viewing the value button division status
Division	Free Division	[CTRL] + Turn (DIVISION)	Change the division free form in 96 PPQN resolution
Length	Reduce Length	Turn (LENGTH)	Reduce the sequence length
Length	Random Start	Press [CLEAR]	Sets a random start point when playing. Glitched playback.
Length	Random Start	[CLEAR] + Turn (LENGTH)	Sets a random start point when playing and changing length value. Glitched playback.
Velocity	Base Velocity	Turn (VELOCITY)	Set the base velocity for notes
Accent	Variation Velocity	Turn (ACCENT)	Applies the amount of groove template to the velocity profile
Groove	Select Groove	Turn (GROOVE)	Selects one of 8 groove templates. Also use [VBx] when displaying groove view.
Timing	Micro-timing	Turn (TIMING)	Adjust the micro timing of some notes earlier or later
Delay	Note delay	[CTRL] + Turn (DELAY)	Adjust all notes earlier or later
Probability	Chance	[CTRL] + Turn (PROBABILITY)	Applies the chance of a note bing silent

2 Generic Setup

Function	Action	T-1 Sequencer Command	Description
Repeater	Add Repeats	Turn (REPEATS)	Add or remove the number of repeats to a note pulse
Repeater	Choke	Press (REPEATS) + [VB8]	Curtails repeats on a new note
Repeater	Tail	Press (REPEATS) + [VB16]	Overlays repeats on a new note
Repeater	Stop	[CLEAR]	Stops repeats when in repeater view
Time	Repeat Time	Turn (TIME)	Adjust the repeat time division
Offset	Repeat Ramps	Turn (OFFSET)	Adjust the repeater velocity ramp up or down
Pace	Repeat Speed	[CTRL] + Turn (PACE)	Adjust the acceleration or deceleration of repeats
Pitch	Assign Notes	Hold (PITCH) + [VBx]	Add or remove notes into the pitch menu
Pitch	Transpose Notes	Turn (PITCH)	Transpose per note, the notes in the pitch menu
Harmony	Chord variation	Turn (HARMONY)	Adjust chord variations from pitch menu notes
Scale	Change Scale	Hold (SCALE) + [VBx]	Select an alternate scale
Root	Root Note	[CTRL] + Turn (ROOT)	Select an alternate root note in the selected scale
Style	Pitch Template	[CTRL] + (STYLE) + [VBx]	Select one of 6 style templates for melodic variations
Voicing	Style amount	Turn (VOICING)	Amount of style transformation
Phrase	Melodic phrase	[CTRL] + (PHRASE) + [VBx]	Selects one of 8 phrase templates for melodic patterns
Range	Note range	Turn (RANGE)	Amount of note variation from phrase
Temp	Performance	Hold [TEMP] + Turn (Knob)	Temporarily adjust parameters and restores setting when released. Ideal for performance actions.
Cycles	Edit Cycle	Tap [VBx] for Cycle	Select on or more cycles to edit
Cycles	Number of Cycles	[CTRL] + Turn (CYCLES)	Increase or decrease number of available cycles. Also set the absolute cycle number [CTRL] + (CYCLES) + [VBx]
Cycles	Delete	[CLEAR] + [VBx]	In cycle view, clear a cycle parameter edits
Random	Randomisation	Hold (RANDOM) + Turn (Knob)	Apply randomisation to the parameter
Random	Variance	Turn (RANDOM)	Adjust random sequence variance probability
Random	Apply Slew	[CTRL] + (RANDOM) + Turn (Knob)	Apply a slew smoothing to sequence steps
Random	Phase Shift	Hold (RANDOM) + (Knob) + [VB8]	Phase shift random sequence earlier
Random	Phase Shift	Hold (RANDOM) + (Knob) + [VB16]	Phase shift random sequence later
Channel	MIDI Channel	Hold (CHANNEL) + [VBx]	Set the MIDI channel(s) for the track. Also Turn (CHANNELS)
Channel	Routing	Hold [CTRL] + (CHANNEL) + [VBx]	Route track out to track input. Sets track to input to from currently selected track.

2.10 Button Colour Reference.

The T-1 Value buttons offer a visual feedback based through their illuminated colour. The actual colour will be based on the status and the mode currently in operation as indicated in this quick reference guide.

Tracks

Note Track Active Track	CC Track Active Track	FX Track Active Track	Track Muted	Tracks Not Selected
Orange	Cyan	Magenta	Blue Grey	Off

Tracks is the default 'home' view when T-1 is initially powered up and when pressing [BANK]

Pattern

Pattern Active / Queued	Pattern Empty Pattern	Pattern Edited Pattern	Chained Pending Play	Playing Pattern Flashing
White	Dark Blue	Blue	Bright Blue	(flashing)

Bank

Bank Active Bank	Bank Empty Bank	Bank Saved Bank	Edited Unsaved
White	Dark Green	Green	Pink

Shape - Euclidean (Step View) / **Shape - Euclidean (Pulse View)**

Steps Active Steps	Pulses Note Pulses	Playhead Position	Steps Active Steps	Pulses Note Pulses
Dimmed Blue	Blue Grey	White	Blue Grey	Orange

Shape - Division

Note Value Quadruplets	Note Value Triplets	Division Active Div	Division Free Running
Blue Grey	Blue	White	Pink

Shape - Cycles

Cycle Number	Cycle Playing Cycle	Playing Cycle Active Cycle	Cycle Edited
Blue Grey	White	(flashing)	Red

Shape - Repeats / **Shape - Repeat Mode**

Repeats Number	Repeats Infinite	Page Repeat Page	Repeat Active	Choke Mode Top Button	Tail Mode Bottom Button
Blue Grey	Blue	Orange	White	Pink	Pink

2 Generic Setup

| Repeat Time Quadruplets	Repeat Time Triplets	Repeat Time Active Time	Quantize Time		Pace Fine Resolution	Pace Active Fine Res	Pace Active Course
Blue Grey	Blue	White	Pink		Blue Grey	White	Orange

Shape - Repeats Time — Shape - Repeat Pace

Order Up Top Button	Order Down Bottom Button	Note Order Active	Note Order Selection Page
Pink	Pink	White	Orange

Shape - Voicing

Poly Styles Top 3 Btns	Mono Styles Bottom 3 Btns	Cadence Top 4 Btns	LFO's Bottom 4 Btns	Phrase CV Controlled	Phrase / Style Active
Dark Green	Dark Green	Dark Green	Dark Green	Pink	White

Shape - Style — Shape - Phrase

Rate x2 Top Button	Rate /2 Bottom Button	Pitch Variation Active	Pitch Variation Selection Page
Pink	Pink	White	Orange

Shape - Range

Velocity Active 0-127	Sustain Lit Active	Note Phase Notes to Silence	Probability Active	Probability Selection Page
Blue Grey	Blue Grey	Pink	White	Orange

Groove — Groove Probability

Accent Top Button	Accent Bottom Button	Accent Active	Accent Selection Page	Groove 1-4 Top Buttons	Groove 5-8 Bottom Buttons	Groove CV Control
Pink	Pink	White	Orange	Dark Green	Dark Green	Pink

Groove - Accent — Groove

Micro-Timing Sub-divisions	Micro-Timing Active	Micro-Timing Course Adjust	Micro-Timing Fine Adjust	Delay Active	Delay Fixed Internals	Delay +/- Options
Pink	White	Orange	Blue Grey	White	Orange	Blue Grey

Groove - Timing — Groove - Delay

Pitch Notes Black Keys	Pitch Notes White Keys	Pitch Notes Selected	Notes Out of Scale	Octave Up / Down
Blue	White	Orange	Blue Grey	Pink

Tonal - Pitch

Scale
Active

White

Scales
Chro, Maj, Min

Blue Grey

Scales
Other Scales

Blue

Scale
User Defined

Pink

Tonal - Scale

Root Note
Selected

Pink

Notes
Black Keys

Blue

Notes
White Keys

White

Tonal - Root

Mod Sequence Amount
Amount

Pink ⟷ Blue Grey

Modulation
Phase Shift

Blue Grey

Mod Range
-100% to 100%

Pink

Modulation
Active Amount

White

Randomness ——— Randomness + Other Parameter

Random Rate
Quadruplets

Blue Grey

Random Rate
Triplets

Pink

Rate
Active

White

Randomness - Rate

Length
In Bars

Green

Length
Bar Divisions

Dark Green

Length
Active

White

Length
Infinite

Blue

Quantize
In Bars

Green

Quantize
Bar Divisions

Dark Green

Quantize
Active

White

Setup - Length ——— Setup - Quantize

MIDI Channel
Active

White

MIDI Channel
Available

Dark Green

Tempo
Active

Blue Grey

Setup - Channel ——— Tempo

3

Rhythmic Patterns

Tracks and patterns work together for developing drum beats and melodic progressions. Patterns are located in banks where each bank holds 16 patterns, each of which contains 16 tracks. A pattern is a sequence of events that triggers within one or more tracks. Think of tracks as the location for individual instrument control and parameters settings. For example, a Kick, Snare, Hi Hat may be constituent instruments within a pattern triggering a complete drum beat. Each part I.e Kick could be an individual instrument track. Multiple patterns can then provide variations and passages in a full song arrangement. Strictly speaking, a track can be set to trigger more than one instrument. In fact multiple devices can be triggered from a single track. However as a starting point it is good to initially think of tracks and patterns in their simplest form. Rhythmic patterns are created in T-1 using a generative Euclidean sequencing engine coupled with arpeggiation and other pattern features added to further more melodic parts. Traditional step programming of pattern events is also possible but T-1's core strength lies with fluid and organic pattern generation. This section focusses on the core elements of rhythmic pattern generation. This is primarily focussed around Euclidean sequencing. A multitude of parameter controls combine to develop evolving and inspiring sequences and later more variations and modulation can be added. T-1 can be central to a setup and operate as 'the instrument'. Mastering pattern generation can become an integral part of the art of music making and also an enjoyable and fun part of the creative journey. This section will concentrate on the fundamentals of patterns and tracks and building linear rhythmic patterns - mainly single note or beat orientated sequences.

3 Rhythmic Patterns

3.1 Patterns v Tracks

There are 16 patterns per bank, each pattern contains 16 tracks. Patterns control the sequencing part while tracks control the musical part and the final output. Tracks can be set to control note information, MIDI CC - Control Change messages and FX for incoming MIDI. Patterns can be changed or chained in series to create a full arrangement for example intro, verses, chorus etc.

BANK 1   Tempo parameter stored at bank Level

PATTERN 1   Quantize parameter stored at pattern Level

Other parameters stored at track Level

Sequence Data	Music & Channel Data	Output
	Track 1	MIDI Channel 1
	Track 2	MIDI Channel 1
	Track 3	MIDI Channel 2
	Track 4	MIDI Channel 2
	Track 5	MIDI Channel 2
	Track 6	MIDI Channel 3
	Track 7	MIDI Channel 4
	Track 8	
	Track 9	
	Track 10	
	Track 11	
	Track 12	
	Track 13	
	Track 14	
	Track 15	
	Track 16	

PATTERN 2   **Tracks**

etc   Tracks operate in parallel, patterns operate in series

When creating patterns the track must be selected to edit the specific part of the pattern. The pattern can be created and edited over 4 visible pages each with 16 steps. Therefore 64 steps in total.

What is a Step?

A step in T-1 is the location within a pattern where an event can be setup to occur. This can be a note or control change event. Steps are laid out in the defined divisions and are empty unless edited with a pulse or locked to specific parameter values.

What is a Pulse?

In T-1 a pulse refers to an event which is applied to a step. The step is no longer empty and when the play head reaches the pulse, an event is triggered. This will typically play a melodic note or drum beat or contain a parameter change.

Step Sequencer View.

The default view in T-1 is the Tracks view. When pressing or turning (STEPS) or (PULSES), the step or pulse sequencer view is displayed. The value button view for the step sequencer will differ slightly depending on the mode selected.

Sequencer View Modes.

DIMMED BLUE ■ • BLUE GREY ■
Steps   Euclidean & Step Edit Pulses

Step View
Hold (STEPS). Double tap (STEPS) to retain the value button display.

WHITE ■   OFF
Playhead position   Inactive Steps

ORANGE ■   BLUE GREY ■
Euclidean & Step Edit Pulses   Active Steps

Pulse View
Hold (PULSES). Double tap (PULSES) to retain the value button display.

RED ■   Flashing step indicates
Step Edited   active step selected to edit

3 Rhythmic Patterns

All tracks will play together in parallel controlled by a segment of the entire pattern. One pattern will operate singularly while other patterns can be queued or chained in series. The next pattern will play when the pri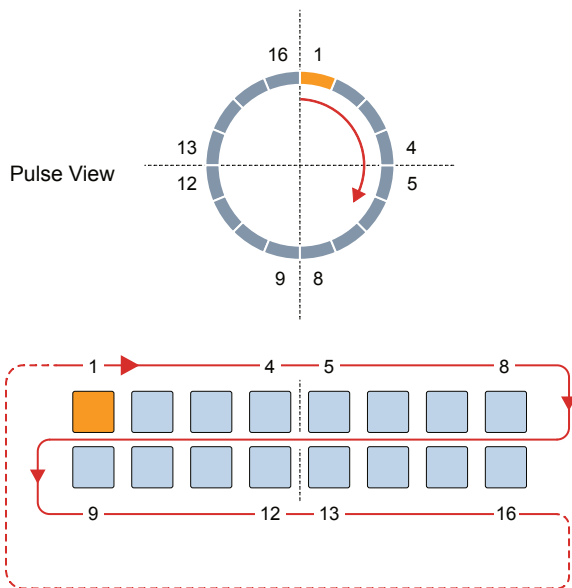or completes. Patterns are by default 16 steps in length but can be extended up to 64 steps or reduced. The quantize option is managed at pattern level.

Patterns will play and loop from the first designated step (defined by rotation) through to the last designated step (based on number of steps defined) and then restart back to the first step.

Each track can have an individual step count and settings which can help create interesting polyrhythms and sequences.
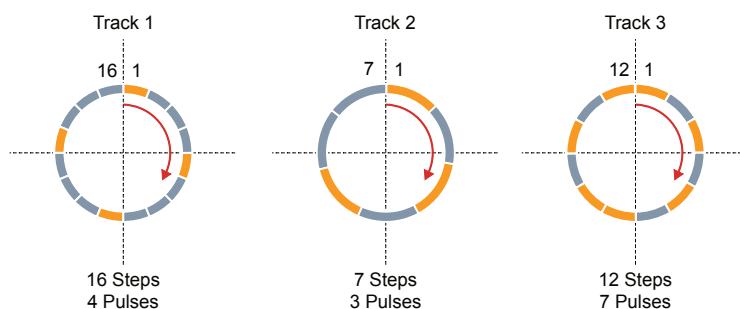
Think in terms of a track being the 'instrument' mainly managed in the tonal section. Think of a pattern as the 'melody'. Rhythmic elements in the pattern are mainly managed in the shape section. The quantize option is only managed at pattern level.

3.2 Euclidean Sequencing Concept

A sequence is a series of note events built within a pattern. T-1 uses a number of generative models to develop a sequence. These models can be combined to create elaborate and evolving patterns. Traditional note placement is also possible. Two fundamental concepts used in T-1 are Euclidean sequencing and Arpeggio's. T-1's parameters and setting build on and around these models.

What is Euclidean Sequencing?

Euclidean geometry is a mathematical theory developed by Greek mathematician Euclid. These formulas and applications have been developed and evolved over time to become part of musical sequencing algorithms.

At first glance this may appear complex, but basic Euclidean sequencing is actually quite simple. Essentially this model is based on the number of steps in a pattern divided by the number of events. The events are then spread as evenly as possible across the length of the pattern. Layering patterns can then create interesting and intricate sequences.

Pattern = 16 Steps ◯

1   16

Events = 5 ◯   16/5 = 3.2 Intervals. Population in reality is rounded.
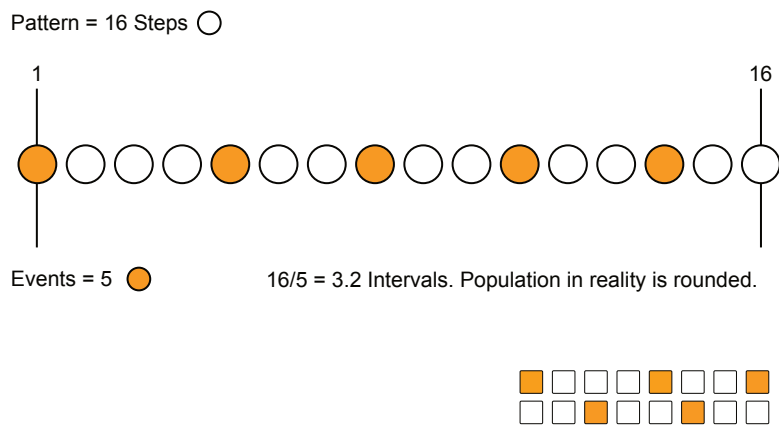
3 Rhythmic Patterns

How is Euclidean Sequencing Applied in T-1?

The SHAPE section of T-1 hosts parameters that define pattern structures and their components. Here there are 4 core parameters that form the foundation for T-1 Euclidean sequencing.

- Steps: Total number of steps within the patterns cycle for each track. The range is 1-16 and by default is set to the maximum 16 steps. Steps are presented as DIMMED BLUE ■ when pressing (STEPS).

- Pulses: A pulse is a note event. Empty steps trigger nothing while a pulse will trigger an note event to create beats and melodies. Number of pulses can be generated and are automatically spread evenly across the total number of available steps. Pulses are presented in ORANGE ■ when pressing (PULSES).

- Rotate: The starting point or first step in the pattern.

- Division: This is the division value between each note step and sets the timing of each step in the pattern. Press (DIVISION) to see the current setting, illuminated in WHITE ■.

Pulse View
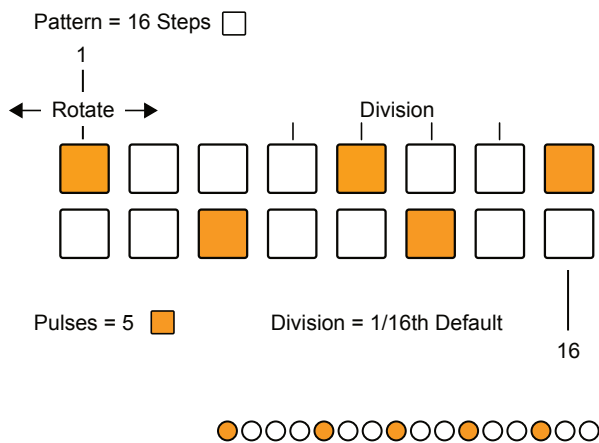
There are many other parameters than can build on and expand the Euclidean pattern. These will be covered later in more detail.

3.3 Selecting & Playing Patterns
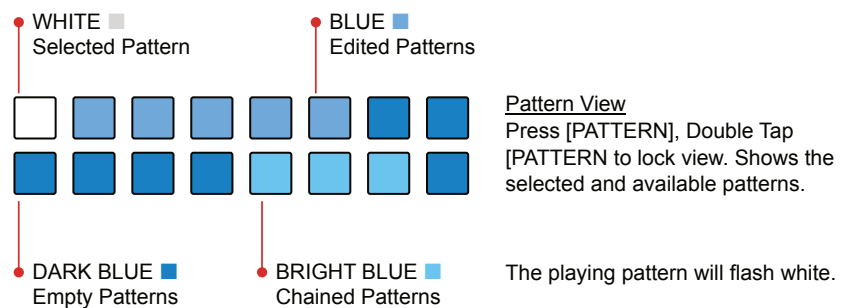
Selecting a pattern is an integrated part of the bank selection process. Patterns can also be individually selected both for playback and for editing. Patterns selected will play in series, one after the other, while tracks play simultaneously, in parallel within the pattern.

▌ SELECTING A PATTERN FOR EDITING - PATTERN STOPPED

1. Select a pattern. Hold **[PATTERN]** + Press **[VBx]**, where 'x' is the value button that represents the desired pattern.

2. While **[PATTERN]** is held, the state can be viewed on the value buttons. Press **[PATTERN]** twice to lock the pattern view.

3. The currently selected pattern will be represented by the WHITE ▢ lit value button.

4. Patterns edited, with content are lit BLUE ▣. Empty patterns are lit DARK BLUE ▣.

5. Select pattern can be edited.

WHITE ▢   BLUE ▣
Selected Pattern   Edited Patterns

Pattern View
Press [PATTERN], Double Tap [PATTERN to lock view. Shows the selected and available patterns.

DARK BLUE ▣   BRIGHT BLUE ▣   The playing pattern will flash white.
Empty Patterns   Chained Patterns

▌ PLAYING A PATTERN

1. Press **[PLAY]**. The selected pattern will play and loop.

2. The active playing pattern will be represented by the WHITE ▢ flashing value button. Viewed in the pattern page by holding **[PATTERN]**.

3. To queue a pattern for playback. While playing, Hold **[PATTERN]** + Press **[VBx]**, where 'x' is the value button that represents the desired pattern to play next. Double press **[PATTERN]** to lock pattern view.

4. The queued pattern will be lit WHITE ▢ until the previous pattern concludes. The new pattern will flash when playing starts.

3 Rhythmic Patterns

▌ SELECTING A PATTERN FOR EDITING - PATTERN PLAYING

1. Select and play a pattern. Hold **[PATTERN]** + Press **[VBx]**, where 'x' is the value button that represents the desired pattern.

2. While **[PATTERN]** is held, the state can be viewed on the value buttons. Press **[PATTERN]** twice to lock the pattern view.

3. The currently selected and playing pattern will be represented by the WHITE ▢ flashing value button.

4. If T-1 is playing, the selected pattern will be queued to play following conclusion of the current pattern. The selected and queued pattern will be lit static WHITE ▢ and can be edited.

5. To select without playing the pattern. While the pattern plays, Hold **[CTRL]** + **[PATTERN]** + Press **[VBx]**, where 'x' is the value button that represents the desired pattern.

▌ CHAINING PATTERNS

1. Press **[PLAY]**. The selected pattern will play and loop.

2. The active playing pattern will be represented by the WHITE ▢ flashing value button. Viewed in the pattern page by holding **[PATTERN]** or double press **[PATTERN]** to lock pattern view.

3. To create a chain of multiple patterns to play in order.
   With pattern view locked, Press **[VBx]** of the first pattern + Press **[VBx]** of the second pattern + Press **[VBx]** of the third pattern etc. All buttons must be held simultaneously, but pressed in a defined order before releasing.

4. The chained patterns will be lit BRIGHT BLUE ▢ while the chain is active. The actively playing pattern in the chain will flash WHITE ▢ when playing starts.

5. The chained patterns will loop playback in the order they were selected.

6. Select a pattern to release the chain.

3.4 Selecting Tracks

Pattern segments that will control each of the 16 tracks. The default view when powering T-1 up is the track view. Track selection would therefore be the first task in the process of building a sequence. Tracks can be edited individually or multiple tracks edited together.

A track can operate in 3 modes; Default note sequencer mode, CC Mode for controlling MIDI control change output messages and FX Mode to affect incoming MIDI. Modes operate on the track in parallel so, for example notes in the track can still play while operating in CC mode.

Track View

ORANGE ■
Selected Note Track(s)

CYAN ■
Selected CC Track(s)

Track View
Default 'home' view. Shows the selected track(s) on the value buttons. Mode shown by colour of the track button.

MAGENTA ■
Selected FX Track(s)
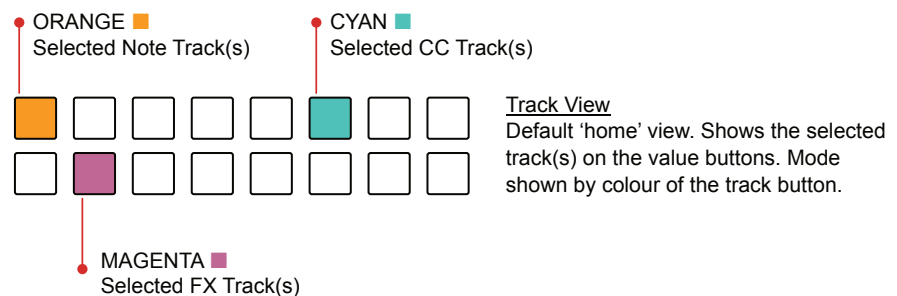
Tracks that are not selected are shown unlit on the value buttons. One or more tracks can be selected simultaneously and will illuminate in the representative track mode colour.

ORANGE ■
Selected Note Track(s)

Double tap Note Track to
switch to pulse sequencer

[CTRL] + [VBx]
Selected when [CTRL] is released

MAGENTA ■
Selected FX Track(s)

Double tap FX Track to
switch to chromatic keyboard

CYAN ■
Selected CC Track(s)

Double tap CC Track to
switch to CC Sequencer

In Track view, double tapping the track button will switch to the pulse sequencer view for note tracks and CC sequencer for CC Tracks. In the case of an FX track, double tapping the value button will switch to the chromatic manual pitch keyboard.

3 Rhythmic Patterns

▌ SELECTING ONE OR MORE TRACKS

1. Press **[BANK]** to ensure the 'home' track view is in focus. The track view will be shown by default at start up. Currently playing tracks will flash.

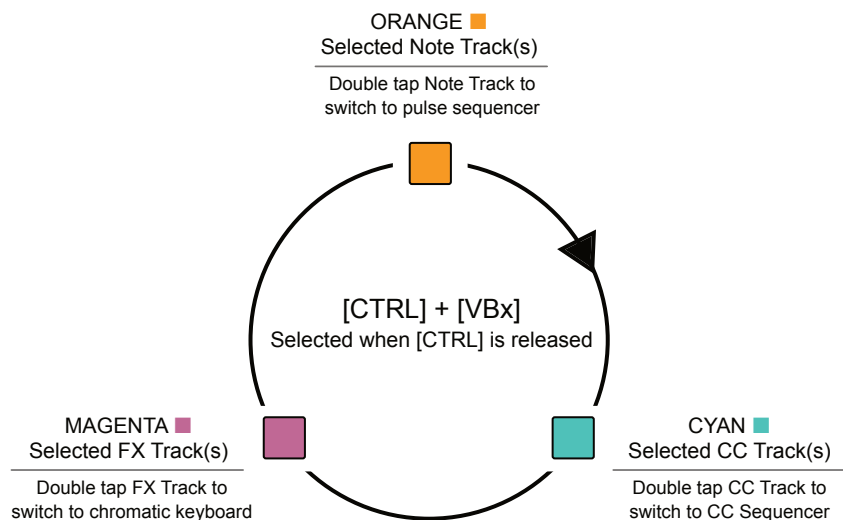2. Select a track. Press **[VBx]**, where 'x' is the value button that represents the desired track. Example, Press **[VB1]** to select Track 1.

3. The selected track will illuminate:-

   • ORANGE ■ for normal sequencer mode for tracks.

   • CYAN ■ for MIDI CC - Control Change mode for tracks.

   • MAGENTA ■ for MIDI FX mode for tracks.

4. To toggle between the normal note sequence, MIDI CC or MIDI FX modes, Hold **[CTRL]** + Press **[VBx]** where 'x' is the value button that represents the desired track. The track will cycle between the modes from each button press iteration. Track mode is only selected as active when the **[CTRL]** button is released.

5. To select multiple tracks for simultaneous editing. Hold **[VBx]** + **[VBx]**, where 'x' is the value buttons that represents the desired tracks to select. Example, Press **[VB1]** + **[VB2]** to select Track 1 & 2. The selected tracks will illuminate ORANGE ■ or CYAN ■ or MAGENTA ■.

▌ SWITCHING FROM TRACK TO PULSE VIEW

1. Press **[BANK]** to ensure the 'home' track view is in focus. The track view will be shown by default at start up. Currently playing tracks will flash.

2. Select a track's pulse view. Double tap **[VBx]**, where 'x' is the value button that represents the desired track. Example, Press **[VB1]** to select Track 1.

3. The view will switch from track view to the pulses sequencer view.

When multiple tracks are selected parameters can be adjusted. The behaviour of the parameter changes is dependant on how the change is applied. Relative editing adjusts a parameter value up or down from its current position. Absolute editing set a definitive value for the parameter.

▌ MULTI-TRACK PARAMETER EDITING

1. Relative editing.

    •   Turn a **(Knob)** to adjust the parameter, relative to its current value up or down. The parameter is affected only on <u>selected tracks</u>.

    •   Hold **[PATTERN]** + Turn **(Knob)** to adjust the parameter, relative to its current value up or down. The parameter on <u>all tracks</u> is affected.

2. Absolute editing.

    •   With the parameter settings in view i.e. double press **(Knob)**. Press a **[VBx]** to adjust the parameter. Using the value button selection will set an absolute value, only across <u>selected tracks</u>.

    •   Hold **[PATTERN]** + Double Press **(Knob)**, then Press **[VBx]** to adjust the parameter. Ensure **[PATTERN]** is held throughout. Using the value button selection will set an absolute value, across <u>all tracks</u>.

3 Rhythmic Patterns

3.5 Steps, Pulses & Rotate - Basic Euclidean Patterns

Shape Section

The shape section is the primary area for the pattern generation parameters and is where a melodic or beat driven pattern cycle is created. At this point, these parameters control the patterns 'linear note' structure and the pitch based elements are applied later using other parameters. There are 8 physical push knobs, some of which provide dual control of primary and secondary parameters and can be pressed to view the parameter status on the value buttons.

This section concentrates on four of the most basic shape parameters; Steps, Pulses, Rotate and Division. The Rotate parameter is accessed as the secondary parameter using the [CTRL] button along with Pulses.
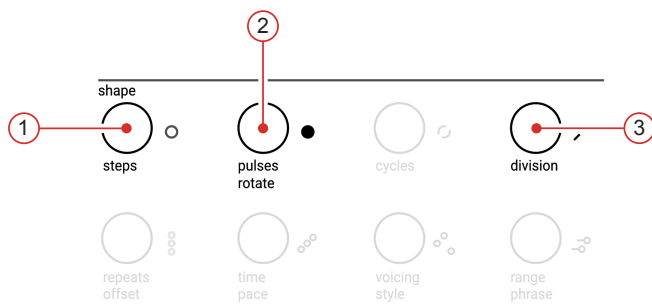
	Parameter	Turn	Push	Ctrl + Turn
1	steps	Sets total number of steps in track pattern.	Step sequencer view. Shows steps and pulses.	
2	pulses rotate	Number of Euclidean pulses in a track pattern.	Pulse sequence view. Shows steps and pulses.	Sets pattern start point.
3	division	Adjusts each note value of each step in the cycle.	View division status and options in value buttons.	

Pulses and Rotate are controlled by the same physical knob. Rotate is the secondary function accessible using [CTRL].

Steps & Pulses

The following examples assume that an audio device, DAW or instrument is connected as the sound destination. Also that bank and pattern to edit have already been chosen prior to selecting the track and creating a pattern.

Note that editing a Euclidean pattern will only change the pulses generated by the Euclidean pulse option. Manually added pulses will not be affected when editing using the (PULSES) function.

▍ CREATING A BASIC EUCLIDEAN PATTERN - STEPS / PULSES

1. Press [BANK] to ensure the 'home' mode is in focus.

2. Select a track. Press [VBx], where 'x' is the value button that represents the desired track. Example, Press [VB1] to select Track 1.

3. Set the number of steps. Turn (STEPS). This will also temporarily display the state of the pattern whilst editing. Alternatively, Hold (STEPS) + Press [VBx] where 'x' is the last step in the step count, represented by the value buttons.

    •   Press (STEPS) Twice, will retain the step sequence view even when the control knob is released.

    •   Just turning (STEPS) adjusts the number of steps. Any existing euclidean pulses are redistributed equally.

4. Generate Euclidean pulse events. Turn (PULSES). This will also temporarily display the state of the pattern whilst editing. Each rotation click clockwise will add a pulse and each rotation click anti-clockwise will remove a pulse. Pulses are distributed evenly across the steps.

    •   Press (PULSES) Twice, will retain the pulse sequence view even when the control knob is released.

    •   Just turning (PULSES) adjusts the number of Euclidean pulses.

    •   Holding [PATTERN] while adjusting (PULSES), or by holding (RANDOM) + (PULSES) will only adjust the value if one or more pulses already exist on the track. If no pulses exist, additional pulses cannot be added and the random value cannot be adjusted.

5. Play the pattern. Press [PLAY]. Press again to stop playback. Press [PLAY] again to re-start playback from the beginning.

3 Rhythmic Patterns

Rotate

The start point in a Euclidean pattern can be rotated. While this is ok for adjusting a fixed patterns start, it is even more interesting as a performance option by making adjustments on-the-fly.

Note that changing the start using the (ROTATE) function will effectively play as if both Euclidean and manual pulses are shifted in the track.

▌ ADJUSTING START OF A EUCLIDEAN PATTERN - ROTATE

1. Press [BANK] to ensure the 'home' mode is in focus.

2. Select an existing track to edit. Press [VBx], where 'x' is the value button that represents the desired track. Example, Press [VB1] to select Track 1 for editing.

3. Optionally view the pulse sequence. Double tap (PULSES) to retain the pulse sequence view even when the control knob is released.

4. To rotate the start point. Press [CTRL] + Turn (ROTATE). Each rotation click clockwise will shift the entire track pattern one step later. Each rotation click anti-clockwise will shift by one step earlier. When rotating, a pulse at the start will wrap around to the end or a pulse at the end will wrap around to the start depending on direction of rotation.

● First Step   Rotation

Original Pattern State

1 Step Rotation to Start Earlier.   1 Step Rotation to Start Later
Anti-Clockwise   Clockwise
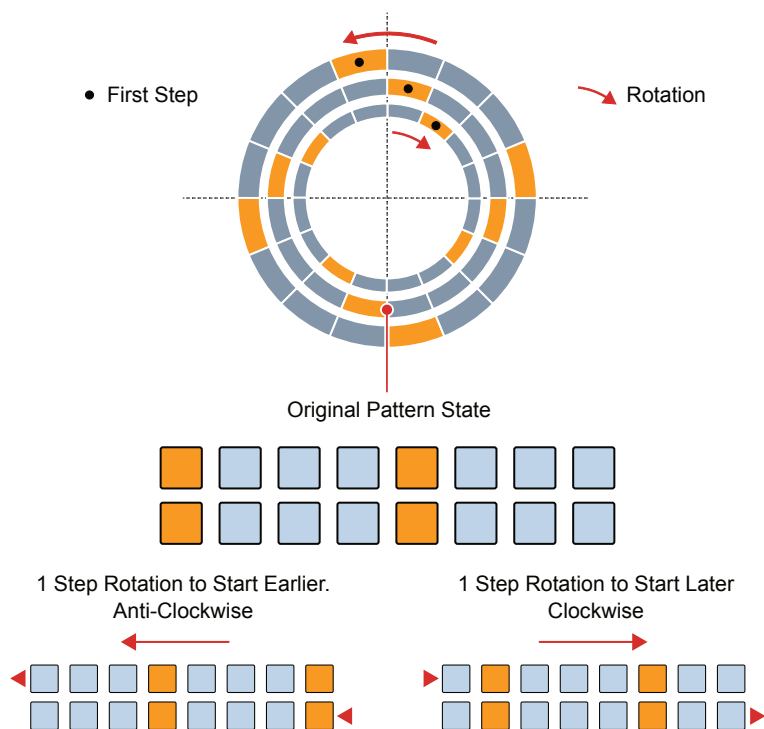
Extending Pattern Step Count

The default sequence length is 16 steps but can easily be adjusted with the (STEPS) control. A maximum of 64 steps are available managed in groups of 16 steps, and made visible through 4 pages. Pages are accessed with the bank, pattern, temp and mute buttons. Euclidean pulses are re-distributed when extending steps.

Extend step count:
Hold [CTRL] + Turn (STEPS)
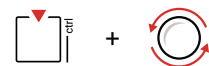
ctrl +

Double tap (STEPS) to lock the view

Pattern 1-16
Default

1

16
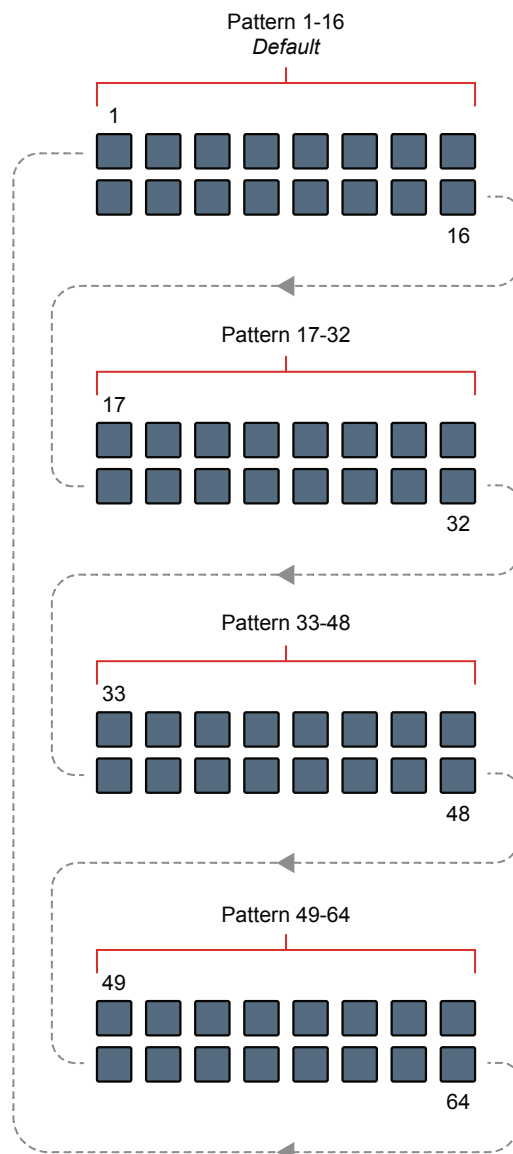
PAGE 1
Show Steps 1-16
Hold [CTRL] + [BANK]

save
bank

Pattern 17-32

17

32

PAGE 2
Show Steps 1-16
Hold [CTRL] + [PATTERN]

select
pattern

Pattern 33-48

33

48

PAGE 3
Show Steps 1-16
Hold [CTRL] + [TEMP]

temp

Pattern 49-64

49

64

PAGE 4
Show Steps 1-16
Hold [CTRL] + [MUTE]

mute

View step pages:
Hold (STEPS) + [CTRL] + Page Button

Or if steps view is locked by double tapping (STEPS), then use [CTRL] + Page Button.

3 Rhythmic Patterns

▌ EXTENDING STEP COUNT

1. Optionally lock the step sequencer view. Double tap **(STEPS)**. This is not essential but is good practice to view the step state. Active steps are displayed DIMMED BLUE ■ and active euclidean pulses will be lit BLUE GREY ■.

2. Extend step count. Hold **[CTRL]** + Turn **(STEPS)**. The number of steps are extended by turning clockwise, 1 step per knob 'click'. The number of steps are reduced by turning anti-clockwise. Inactive steps will not be illuminated at all.

3. Step pages. While holding **[CTRL]** when in step sequencer view, the current page is indicated by the page button lit WHITE ■. The page in view can be selected by holding **[CTRL]** and pressing the associated page button. This only selects the page in view and does not change active / inactive steps in the pattern. Page buttons are:-

    •   Page 1: Steps 1-16 - Default. Select with **[BANK]**.

    •   Page 2: Steps 17-32. Select with **[PATTERN]**.

    •   Page 3: Steps 33-48. Select with **[TEMP]**.

    •   Page 4: Steps 49-64. Select with **[MUTE]**.

4. Quick edit step count. If the view is not locked to step sequencer view, the step pages can be quickly displayed by **[CTRL]** + Press **(STEPS)**. To quickly select a step page, Hold **[CTRL]** + **(STEPS)** + Page button.

5. In step page view, press **[VBx]** value button for the last step in order to extend or shorten the step count.
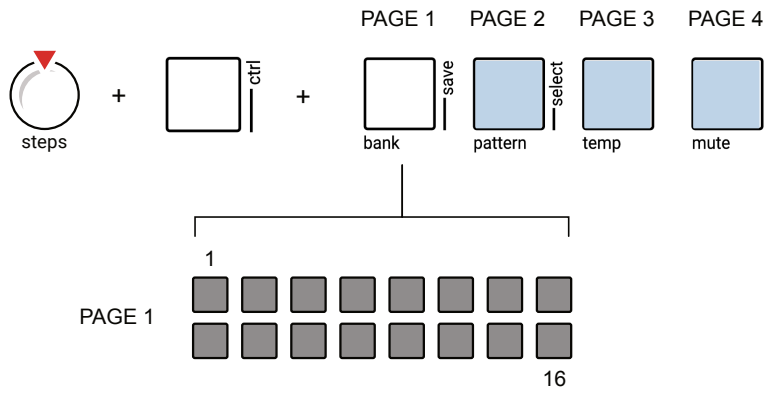

Illustration shows Page 1 - Steps 1-16 is selected in view on the value buttons

3.6 Per Step - Manual Editing Patterns

Per Step editing makes it possible to manually enter pulses as opposed to Euclidean pulse generation. Not only can pulses be individually placed but also the parameter settings for each pulse can be set individually. In fact parameters can be set per step, even without a pulse being present on the step. Pulses entered for manual per step sequencing can be rotated but will not be affected when changing Euclidean pulses.

In summary:

- Euclidean generated pulses can be removed and added by turning the **(PULSES)** knob. Step editing applies manually placed pulses.

- Per-Step editing also extends to the parameters which can be applied to each step, irrespective of whether a pulse is placed on the step or not. Outside of per-step editing mode, parameter changes are applied globally to all steps.

- Parameters excluded from per-step editing mode; Tempo, Delay, Length, Quantize.

- Pulses are added and removed from a pattern by manual per step sequencing using the value buttons when in pulse sequencing view.

- Pulses added manually cannot be removed by the Euclidean **(PULSES)** knob and can only be removed manually using the value buttons.

- Pulses added both manually or by Euclidean generation can be rotated using the **(ROTATE)** knob.
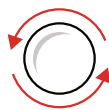
Euclidean sequenced cycles created by added pulses by turning the (PULSES) knob. Remove by turning (PULSES).

ORANGE ■
Euclidean or Per Step Pulses

BLUE GREY ■
Steps

RED ■
Parameter Edited Step
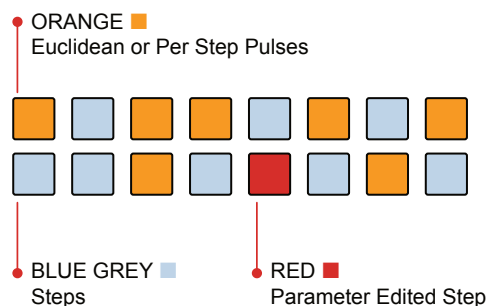
Manual - per step sequenced cycles created by pressing the [VBx] Value buttons to add / remove pulses. Selected pulse flashes, as does the bank button to indicate edit mode.

3 Rhythmic Patterns

▌ MANUAL PER STEP SEQUENCING - PULSES

1. Display pulse step sequencing view on the value buttons by Double Tapping **(PULSES)** knob. This will retain the pulse step sequence view. Euclidean pulses and Per Step pulses are indicated in ORANGE ■.
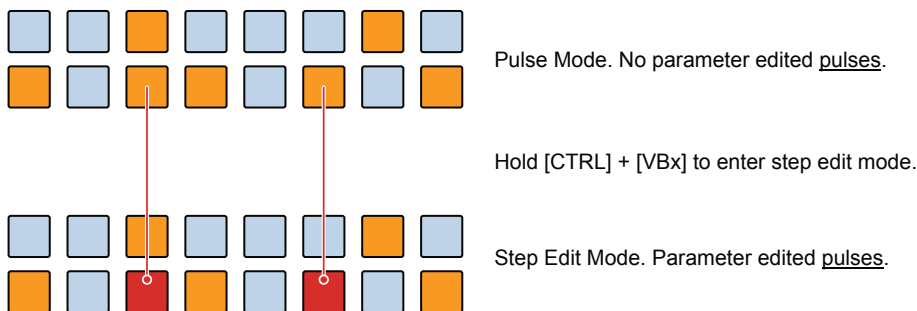
2. Add a pulse manually. Press **[VBx]** where 'x' is the value button representing an empty step, shown as BLUE GREY ■. The pulse is added to the selected step and will illuminate ORANGE ■.

3. Deactivate a pulse manually. Press **[VBx]** where 'x' is the value button representing a pulse. Note that any parameter step edits will remain, although the step is deactivated.

4. To enter Per Step edit mode, Press **[CTRL]** + **[VBx]**.

5. The selected step will flash ORANGE ■ to indicate the step is selected for editing. The **[BANK]** button will flash RED ■ to indicate per step edit mode is active. A pulse is also added to the step.

6. If required multiple steps can be selected to edit together.
    Hold **[CTRL]** + **[VBx]** + **[VBx]** simultaneously, where 'x' represents each step to select.

7. To edit the selected, flashing pulse, Turn the **(Knob)** for one or more parameters to adjust. The parameter change is locked to the step. The Step will illuminate RED ■ to indicate one or more parameters are locked to the step..

8. To clear a pulse and its edits manually, Hold **[CLEAR]** + **[VBx]** where 'x' is the value button representing the step to clear. This will remove the pulse and reset parameters. This will exit step edit mode if active.

9. Press **[BANK]** to exit per step edit mode. Outside of per-step editing mode, parameters are changed globally on all steps.

Pulse Mode. No parameter edited <u>pulses</u>.

Hold [CTRL] + [VBx] to enter step edit mode.

Step Edit Mode. Parameter edited <u>pulses</u>.

Per-step editing is possible with Note or CC Tracks, selected in the track view.

▌ MANUAL PER STEP SEQUENCING - PARAMETER STEPS

1. Display pulse step sequencing view on the value buttons by Double Tapping (PULSES) knob. This will retain the pulse step sequence view. Euclidean pulses and Per Step pulses are indicated in ORANGE ■.

2. Add a pulse manually. Press [VBx] where 'x' is the value button representing an empty step, shown as BLUE GREY ■. The pulse is added to the selected step and will illuminate ORANGE ■.

3. To enter Per Step edit mode, Press [CTRL] + [VBx].

4. The selected step, flashes ORANGE ■ to indicate the step is selected for editing. The [BANK] button flashes RED ■ to indicate per step edit mode is active. A pulse is also added to the step.

5. If required multiple steps can be selected to edit together.
Hold [CTRL] + [VBx] + [VBx] where 'x' is each step to select.

6. To edit the selected, flashing pulse, Turn (Knob) for one or more parameters to adjust. The parameter change is locked to the step. The Step will illuminate RED ■ to indicate one or more parameters are locked to the step. Ensure pulse view is locked to edit.

7. Press [BANK] to exit per step edit mode. Outside of per-step editing mode, parameters are changed globally on all steps.

8. Deactivate a pulse manually. Press [VBx] where 'x' is the value button representing a pulse. Any parameter step edits will remain, although the pulse is deactivated. The step will apply the parameter change without a pulse. These steps can be viewed by holding [CTRL].

9. To clear a pulse and reset its parameters, Hold [CLEAR] + [VBx]. The 'x' is the value button representing the step to clear.

Pulse Mode. Parameter edited steps with no active pulse are not visible but still exist.

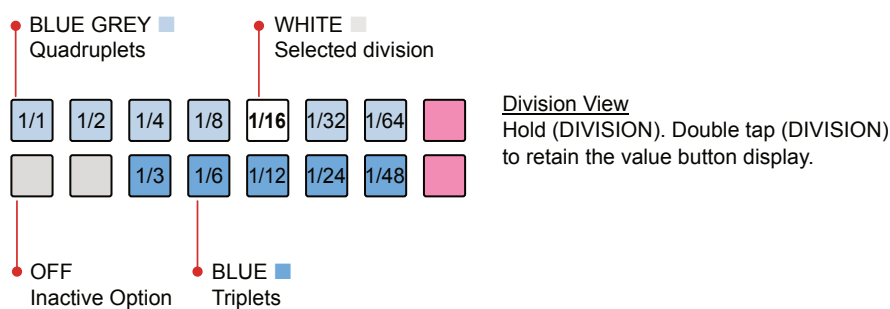Pulse Mode. Hold [CTRL] to view parameter edited steps lit red

Per-step editing is possible with Note or CC Tracks, selected in the track view.

3 Rhythmic Patterns

3.7 Division - Pattern Time Signatures

A pattern is made up of a sequence of steps where the note value of steps is governed by the division parameter. This sets the tracks time signature. The default state is 1/16th but other options are available using the value buttons or parameter knob. State and options are viewed by pressing (**DIVISION**). Double tap (**DIVISION**) to lock the value button division view.

Division View Mode.

BLUE GREY ◻
Quadruplets

WHITE ◻
Selected division

1/1	1/2	1/4	1/8	**1/16**	1/32	1/64	
		1/3	1/6	1/12	1/24	1/48	

Division View
Hold (DIVISION). Double tap (DIVISION) to retain the value button display.

OFF
Inactive Option

BLUE ◻
Triplets

▌ SELECTING A DIVISION SETTING

1. Optionally lock the division view. Double tap (**DIVISION**). This is not essential but is good practice. Just holding (**DIVISION**) will temporarily view the state until the knob is released.

2. Value button state. The active division is displayed on a value button illuminated WHITE ◻. Top row BLUE GREY ◻ Indicates available quadruplet divisions and bottom row BLUE ◻ available triplets.

3. Selecting a division option. Turn (**DIVISION**) to quickly view and change. When in locked division view, Press [VBx] Where 'x' is value button 1-7 or 11-15 to select row and division.

4. The division can also be set freely with a resolution of 96 PPQN. Hold [**CTRL**] + Turn (**DIVISION**) to adjust. The WHITE ◻ Status value button will flash when a free division is applied.

Division Options	Group	Value Button	Option Colour
1/1, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64	Quadruplets	1, 2, 3, 4, 5, 6, 7	BLUE GREY ◻
1/3, 1/6, 1/12, 1/24, 1/48	Triplets	11, 12, 13, 14, 15	BLUE ◻

NOTES

Division Time Signatures

QUADRUPLETS - 4 Beats per Bar

1/1
1/2
1/4
1/8
1/16
1/32
1/64

TRIPLETS - 3 Beats per Bar

1/3
1/6
1/12
1/24
1/48

Example: 4 Bar / 16 Step Length
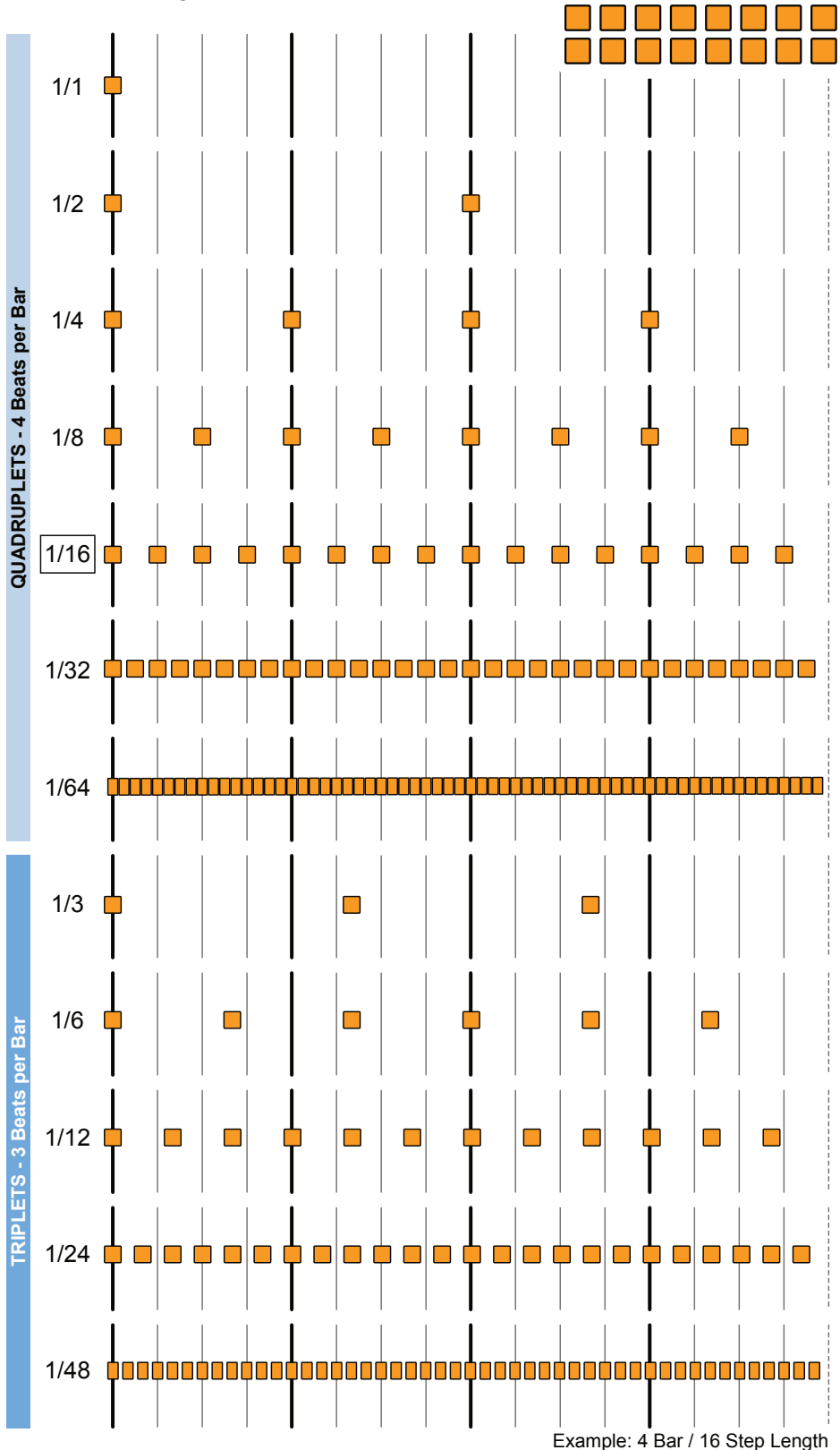
3.8 Length

The length parameter allows the reduction of the entire track length either as a fixed adjustment or to create on the fly variations and loops. The behaviour will of course depend on the total number of steps, especially when reducing in full bar lengths.

GREEN ■
Bar

WHITE ▢
Selected Option

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

| inf | 1/2 | 1/4 | 1/8 | 1/16 | 1/32 | 1/64 | 16 |

Length View
Hold (LENGTH). Double tap (LENGTH) to retain the value button display.
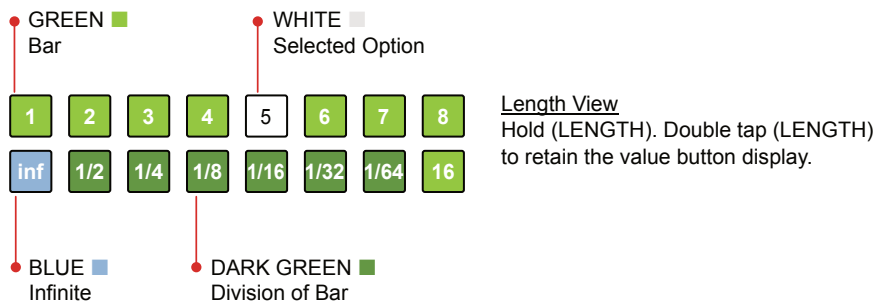
BLUE ■
Infinite

DARK GREEN ■
Division of Bar

▌ REDUCING THE TRACK LENGTH

1. Optionally lock the length view. Double tap (LENGTH). This is not essential but is good practice. Just holding (LENGTH) will temporarily view the state until the knob is released or timed out.

2. Value button state. The active length is displayed on a value button illuminated WHITE ▢. The GREEN ■ Top row plus [VB16] Indicates bar lengths and bottom row DARK GREEN ■ available bar sub divisions. [VB9] is infinite which is the default setting.

3. The length reduction will be based on the total step count which must be higher than the selected length in order to generate a reduced playback length. The track will loop over the length.

4. To select a random start point for the current cycle, press [CLEAR] while in length view. This creates glitch sequences. A random start can also be set when changing length while holding [CLEAR].

Bar 1
Bar 2

Total
Steps

Length

1

1/4

Steps are illustrated , not Pulses
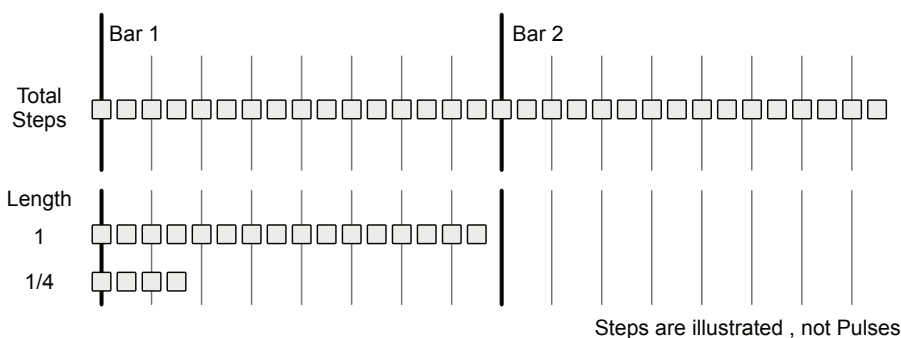
3.9 Pattern Quantize

Quantization is a time based parameter linked to the pattern and serves two purposes:-
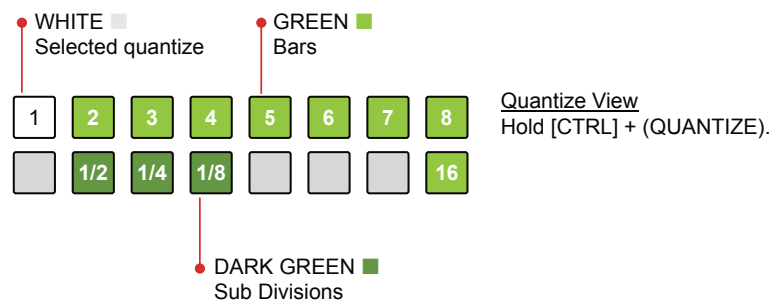
- Quantize ensures synchronisation with the transport control and is based on the time setting selected.

- Quantize determines the current pattern playback time duration before the next queued pattern will start to play.

Quantize operates and is stored at pattern level and is part of the setup section of the T-1 parameters.

Quantize View Mode.

● WHITE □   ● GREEN ■
Selected quantize   Bars

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Quantize View
Hold [CTRL] + (QUANTIZE).

| | 1/2 | 1/4 | 1/8 | | | | 16 |

● DARK GREEN ■
Sub Divisions

▌ SELECTING A QUANTIZE SETTING

1. Hold **[CTRL]** + Press **(QUANTIZE)** will temporarily view the state until the knob is released.

2. Value button state. The active quantize is displayed on a value button illuminated WHITE □. Top row and 16th button, GREEN ■ Indicates quantize in bar lengths. Bottom row DARK GREEN ■ indicates available sub divisions.

3. Selecting a quantize option. Hold **[CTRL]** + Turn **(QUANTIZE)** to quickly view and change. When quantize is displayed, Press **[VBx]** Where 'x' is value button 1-8, 16, 10-12.

Quantize Options	Group	Value Button	Option Colour
1, 2, 3, 4, 5, 6, 7, 8, 16	Bars	1, 2, 3, 4, 5, 6, 7, 8,16	GREEN ■
1/2, 1/4, 1/8	Sub Divisions	11, 12, 13	DARK GREEN ■

Quantize and Length are controlled by the same physical knob. Quantize is the secondary function accessible using [CTRL].

3 Rhythmic Patterns

3.10 Muting Tracks

Tracks contain musical data, CC values and/or FX settings . These can be muted and unmuted when developing compositions and when playing live improvisations. Muting can form a key part of a performances and in retaining musical interest.

▌ MUTING / UNMUTING TRACKS

1. Select track view. Press **[BANK]**.

2. To view muted tracks, Hold **[MUTE]**.

3. Mute a track. Press **[MUTE]** + **[VBx]**, Where 'x' is an unmuted value button. Multiple tracks can be muted simultaneously.

4. Release **[MUTE]**. Muting and unmuting occurs only when the mute button is released. Muted tracks are lit BLUE GREY ■.

5. Unmute a track. Press **[MUTE]** + **[VBx]**, Where 'x' is a muted value button. Multiple tracks can be unmuted simultaneously.

Mute View Mode.

● BLUE GREY ■
Muted

Mute View
Hold [MUTE]. Double tap [MUTE] to lock the mute view on the value buttons.
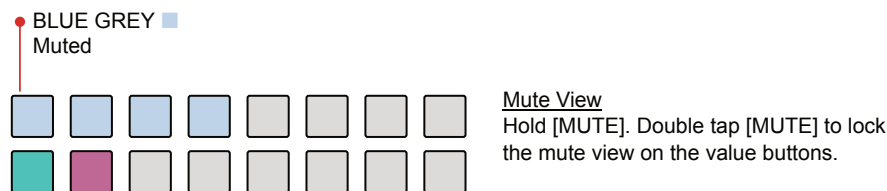
▌ INSTANT MUTING / UNMUTING TRACKS

1. Select track view. Press **[BANK]**.

2. To view muted tracks, Hold **[MUTE]**.

3. Mute a track. Press **[CTRL]** + **[MUTE]** + **[VBx]**, Where 'x' is an unmuted value button. Multiple tracks can be muted simultaneously.

4. Muting / Unmuting occurs instantly in this mode. Muted tracks are lit BLUE GREY ■.

5. Unmute a track. Press **[CTRL]** + **[MUTE]** + **[VBx]**, Where 'x' is a muted value button. Multiple tracks can be unmuted simultaneously.
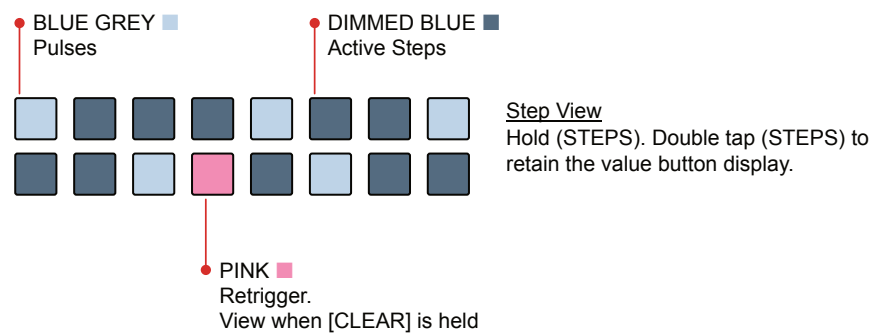
3.11 Retriggers

As well as note and CC steps, retriggers can be added into a pattern. A retrigger is a step that will reset / restart functions within the sequence when the associated step is activated. This is useful to synchronise sequence cycles and especially voicing and range which are freely assigned. The random, phrase, groove and style functions are all reset and restarted when a retrigger step is activated.

BLUE GREY ■
Pulses

DIMMED BLUE ■
Active Steps

Step View
Hold (STEPS). Double tap (STEPS) to retain the value button display.

PINK ■
Retrigger.
View when [CLEAR] is held

▌ CREATING A RETRIGGER STEP

1. Double press (STEPS) to lock the steps view on the value buttons.

2. Hold [CLEAR] + Press [VBx], where 'x' is the value button of step to add a retrigger. The button will illuminate PINK ■.

3. To view, Hold [CLEAR]. The retrigger button will illuminate PINK ■.

4. To remove a retrigger, Hold [CLEAR] + Press [VBx], where 'x' is the value button of an existing retrigger, illuminated PINK ■.

5. When retrigger step is activated during playback, defined sequence functions are reset and restarted. Functions that are reset and restarted on a retrigger are:-

    •   Random

    •   Groove

    •   Phrase

    •   Style

3 Rhythmic Patterns

3.12 Clearing Patterns and Tracks

Tracks, Patterns and Parameters can be cleared and reset to a default state. Tracks and patterns will revert to an original empty state and parameters set to defaults. There is no 'undo' when clearing patterns, tracks and parameters and it should be remembered that this is a destructive action.

▌ CLEARING A TRACK

1. Ensure track mode is in view. Press [BANK] to return 'home'.

2. Hold [CLEAR] + [VBx], where 'x' is the track to clear represented by value buttons 1-16.

3. The track value button will flash red and its settings are cleared.

▌ CLEARING A PATTERN

1. Hold [CLEAR] + [PATTERN] + [VBx], where 'x' is the pattern to clear represented by value buttons 1-16.

2. The value button for the pattern will flash red and the pattern and its sequence data is cleared.

▌ CLEARING AN INDIVIDUAL PARAMETER SETTING

1. Hold [CLEAR] + Press (Knob), where 'Knob' is the parameter control to clear represented by the rotary knobs.

2. The track value button will flash red and the parameter is reset.

3.13 Copying Patterns and Tracks

Tracks, Patterns and Parameters can be copied and pasted to another location, essentially duplicating the settings. Copy is a secondary function accessed with [CTRL] + [COPY]. There is no 'undo' when pasting patterns, tracks and parameters and it should be remembered that this is a destructive action overwriting any existing settings. Parameter data is held within tracks and is therefore copied between tracks.

▌ DUPLICATING A TRACK

1. Ensure track mode is in view. Press [**BANK**] to return 'home'.

2. Hold [**CTRL**] + [**COPY**] + [**VBx**], where 'x' is the track to copy, represented by value buttons 1-16. Keep [**CTRL**] + [**COPY**] held.

3. The source value button will slowly flash GREEN ■.

4. While Still holding [**CTRL**] + [**COPY**], press [**VBx**], where 'x' is the destination track to paste into, represented by value buttons 1-16.

5. The destination value button will quickly flash GREEN ■. The destination will be overwritten with the copied track.

▌ DUPLICATING A PATTERN

1. Hold [**CTRL**] + [**COPY**] + [**PATTERN**] + [**VBx**], where 'x' is the pattern to copy, represented by value buttons 1-16. Keep [**CTRL**] + [**COPY**] + [**PATTERN**] held.

2. The source value button will slowly flash GREEN ■.

3. While Still holding [**CTRL**] + [**COPY**] + [**PATTERN**], press [**VBx**], where 'x' is the destination pattern to paste into.

4. The destination value button will quickly flash GREEN ■. The destination will be overwritten with the copied pattern.

3 Rhythmic Patterns

▌ DUPLICATING A PARAMETER BETWEEN TRACKS

1. Hold **[CTRL]** + **[COPY]** + **[PATTERN]** + **(Knob)**, where 'Knob' is the current track parameter control to copy represented by the rotary knobs.

2. The source track value button will slowly flash GREEN ■.

3. While Still holding **[CTRL]** + **[COPY]** + **[PATTERN]**, press **[VBx]**, where 'x' is the destination track to paste the copied parameter into.

4. The destination track value button will quickly flash GREEN ■. The destination parameter will be overwritten with the copied parameter.

It is a good habit to copy the working bank to another bank as different iterations of your project develop. This way its easy to revert to an earlier version of the project if things get lost in the process.

3.14 Saving Patterns and Tracks with Banks

T-1 has an auto-save function and will restore the previous bank on start up. Patterns and Tracks, including the Parameters can also be manually saved with the bank. There is no manual save for individual patterns or tracks, but this is done within the process for saving the bank.

It is a good habit to regularly save the working bank as patterns are being developed.

▌ SAVING A BANK

1. Edited, unsaved banks will illuminate PINK ◼ when holding [BANK] and in addition, will also flash if a pattern is playing.

2. To save a bank. Hold [CTRL] + [SAVE] + [VBx], 'x' is the value button of the bank to save.

3. The bank button and it's associated value button will flash PINK ◼ indicating the bank is saved and then will turn white.

4. Release the buttons once save is complete.

▌ RELOADING FROM A SAVED BANK

1. Hold for 1 second, [BANK] + [VBx], where 'x' is the edited bank to reload and is represented by value buttons 1-16.

2. The value button will flash green.

3. The previously saved bank in the slot is reloaded.

4. All banks are reloaded if the T-1 is powered up while holding [BANK].

4

Rhythmic Variation

The T-1 can be used to create some interesting and creative elements and the foundation has been laid with rhythmic patterns. T-1 is designed to encourage and drive new ways of working with song production and live performances. This alone is a great start to the process but rhythms can be developed even further by introducing more variations and additional musical elements into the pattern creation process. Parameters such as note length and velocity can be adjusted and edited and used to bring more variety into the sequence. The rhythmic patterns may be a little rigid but accents and small timing adjustments can add a more human feel. The note repeat features have a series of extremely comprehensive options to help create complex and intricate patterns. Bring probability into the equation and the organic side of T-1 starts to open up wider. Even at a rhythmic level the foundation of a pattern can be created and a

expansive range of variation options can be added to create interest and movement. The building of full songs is an iterative process and revisiting the creation of the fundamental pattern and its associated variations will continue through the process. Even without melodic elements, intricate and complex patterns can be created both manually and generatively. The pattern will evolve further when adding melodic components and variations and demonstrate the true organic power of T-1. For now however it's good to stay focussed on understanding the rhythmic foundations and the building blocks to creating variations. These rhythmic processes build in-depth knowledge in these areas before moving on further to more advanced topics.

4 Rhythmic Variation

4.1 Groove Section Overview

The groove section manages the timing and velocity characteristics of a sequence including the length of individual notes. Groove functions aim to impart a human-like feel to patterns rather than the precise nature of digitally sequenced notes. Slight variations in timing of notes and audio level gives a more natural groove.
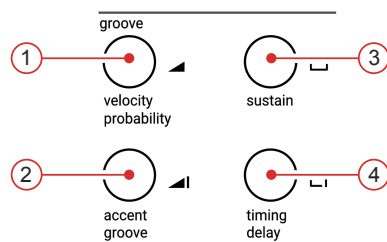
	Parameter	Turn	Push	Ctrl + Turn
1	velocity probability	Base, common velocity of all notes when created	View / change velocity from the value buttons.	Probability or chance of notes not being played.
2	accent groove	Sets velocity variation accent for the pattern.	View / change velocity accent on value buttons.	Applies one of 8 velocity groove templates.
3	sustain	Adjusts note length with respect to division	View / change note length from value buttons	
4	timing delay	Micro timing stretches grid, creating swing with each 2nd subdivision.	View / change micro timing from value buttons	+/- Delay applied to track

Velocity is a musical feature generated naturally by how hard a note is played, typically resulting in a louder or quieter sound. Velocity characteristics are applied using 'Velocity' to set a base level, 'Accent' to generate variation and 'Groove' which applies a velocity and timing template across the pattern.

Timing factors in the natural musical world are based on the accuracy of playing notes in time with the musical beat grid. While programmed notes can be set very precisely, human performances normally have small timing errors. These errors aren't mistakes, but they help build character and personal style into a musical passage. The 'Timing' and 'Delay' parameters can emulate this natural feel while 'Groove' also affects timing.

4.2 Note Length

The length of individual notes is also controlled within the groove section. Note length is adjusted using the 'Sustain' Parameter and is set relative to the 'Division' setting. Note length is applied to both the pulse notes and also to any generated repeats.

Concept

First Step

Pulse

Sustain
Note Length 50%

Steps

Division
1/16

Sustain < 50%
Note Length Shorter than Division

Sustain > 50%
Note Length Longer than Division
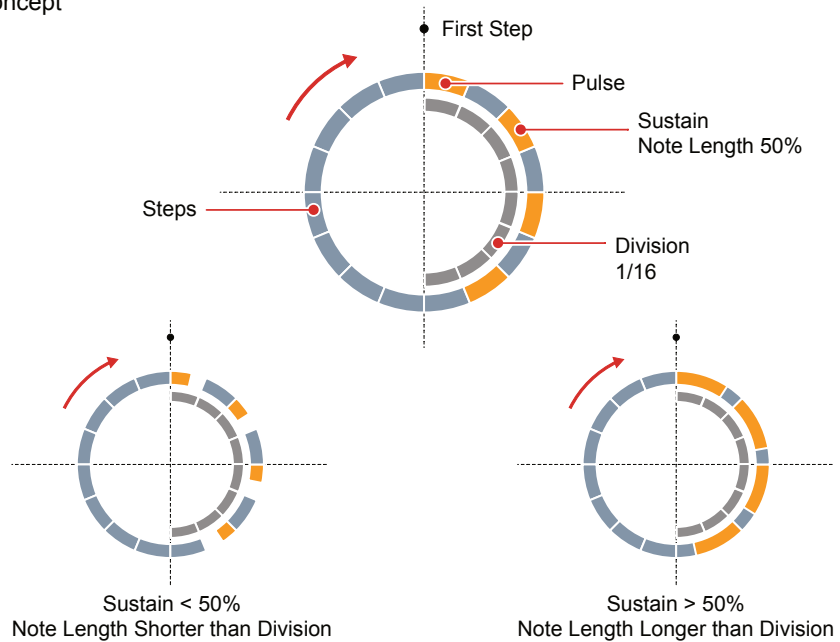
Example of a 1/16th Division and Sustain %

8 Steps

Bar - 16 Steps

0%

50%

1x Div

100%

16x Div
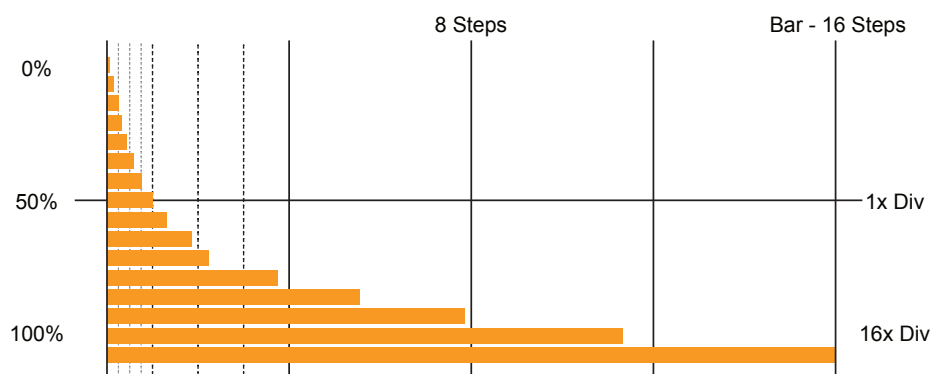
The Sustain parameter is adjusted either by turning the (SUSTAIN) Knob or by pressing the (SUSTAIN) knob and pressing the value buttons. The percentage stated is therefore a reference of how long the note is with respect to the selected division. The actual percentage value is not shown other than with the illumination of the value buttons.

4 Rhythmic Variation

The sustain value for note length visualisation is shown by the number of lit value buttons and their brightness level. Turning (**SUSTAIN**) adjusts at a granular level while the value buttons can make specific percentage change. Hold or double tap (**SUSTAIN**) to see the value button status for note length. Percentages shown are guides only.

Sustain View Mode.

BLUE GREY
Note Length %

	12	18	25	31	38	44	50
56	62	68	75	81	87	93	100
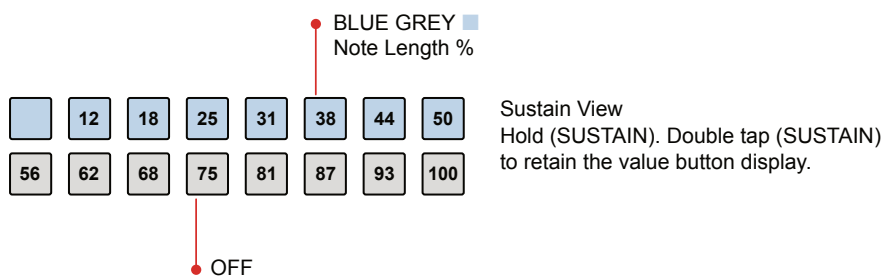
Sustain View
Hold (SUSTAIN). Double tap (SUSTAIN) to retain the value button display.

OFF

Brightness will reflect granular % level adjusted by holding and turning the (SUSTAIN) knob.

Examples: Sustain Note Length with respect to Division

16 Step Pattern

3 Pulses (Division 1/16th)

```
1        5        9        13
```
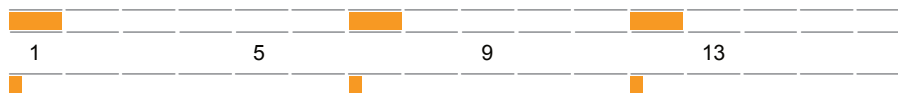
Sustain (19% is approx 1/4 Division)

16 Step Pattern

3 Pulses (Division 1/16th)

```
1        5        9        13
```

Sustain (50% is 1x Division)

16 Step Pattern

1 Pulse (Division 1/16th)

```
1        5        9        13
```

Sustain (100% is 16 x Division)

▌ADJUSTING THE NOTE LENGTH USING SUSTAIN

1. Select the pattern and track.

2. To view the current note length Hold (**SUSTAIN**). Also double Press (**SUSTAIN**) to lock the view. The value buttons will be lit to indicate the current note length. Default is 50%, which is one division, indicated by the top row of 8 buttons.

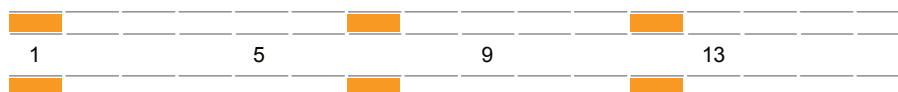3. The length will be applied to all notes and repeats. Any new notes triggered before the prior note ends will cut off the previous note. The % is applied with respect to the division setting.

4. To change the length value either:-

    •   Turn (**SUSTAIN**). This will adjust the value. Although state is visualised, It is useful to adjust length by ear.

    •   Hold and Turn (**SUSTAIN**). This will make granular changes with the value displayed on the value button brightness.

    •   While the value buttons are showing the sustain state, press one of the **[VB1]** - **[VB16]** buttons. This is the best method for specific changes where **[VB16]** represents 100% and **[VB8]** 50%.

4 Rhythmic Variation

4.3 Base Velocity

Velocity is the parameter that represents how hard a note is played. In the digital MIDI world this is typically represented as a value between 1-127. T-1 has a base velocity of 100 which triggers on all notes as the default value. This can be adjusted using the (**VELOCITY**) parameter.

Velocity View Mode.

1	15	23	31	39	47	55	63
71	79	87	95	103	111	119	127

<u>Velocity View</u>
Hold (VELOCITY). Double tap (VELOCITY) to retain the value button display.

BLUE GREY ■
Velocity Level

Brightness will reflect velocity level adjusted by turning the (VELOCITY) knob. For example default 100 is set as 3 knob 'clicks' down from [VB13] value button.

127
100
64
1

Default 100   Range 0-127   Default 100   Default 100

1   5   9   13

3 Pulses (Velocity 100)
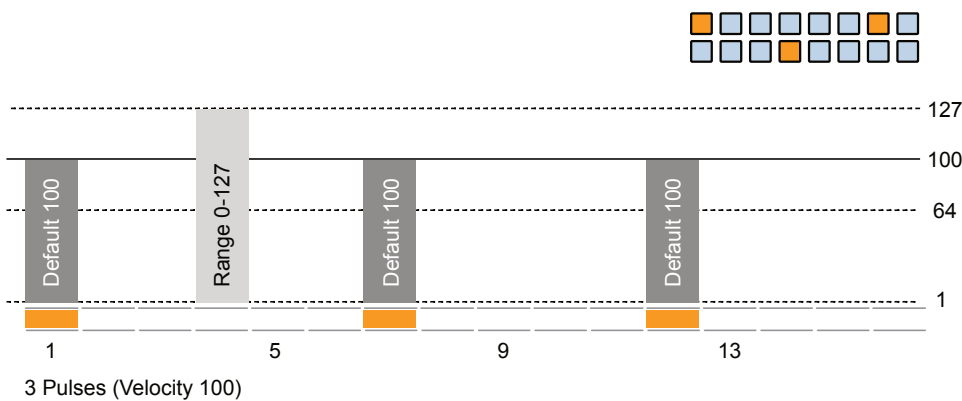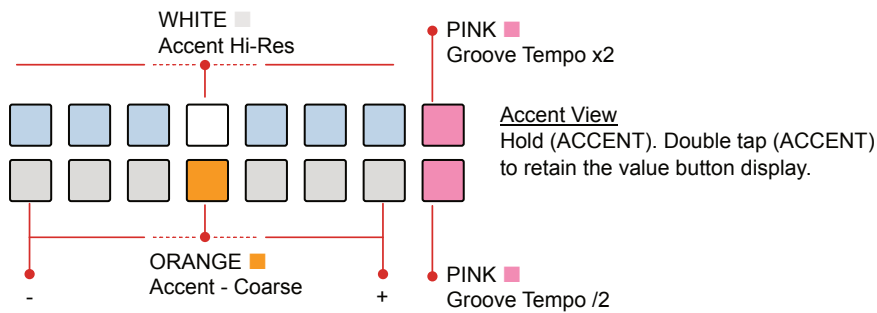
▌ ADJUSTING THE BASE VELOCITY

1. Select the pattern and track.

2. To view the current note length Hold (**VELOCITY**). Also Double tap (**VELOCITY**) to lock the view. The value buttons will be lit to indicate the current velocity level. Default is 100 indicated by the value buttons.

3. The velocity set will be used for the basis of any and all played notes

4. To change the velocity level, either:

    •   Turn (**VELOCITY**). This will adjust the value but is useful when adjusting velocity by ear. Approx 1 Click on the knob rotation will generate 1 velocity change.

    •   Hold and Turn (**VELOCITY**). This will make 1 unit changes with the value displayed on the value button brightness.

    •   While the value buttons are showing the velocity state, press one of the [**VB1**] - [**VB16**] buttons. This is the best method for specific changes where [**VB16**] represents 127 and [**VB1**] represents 1.
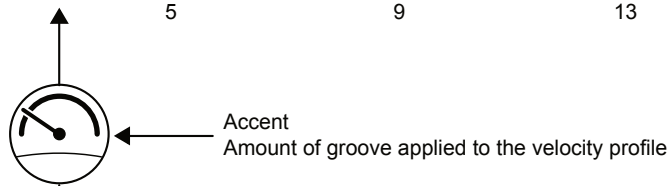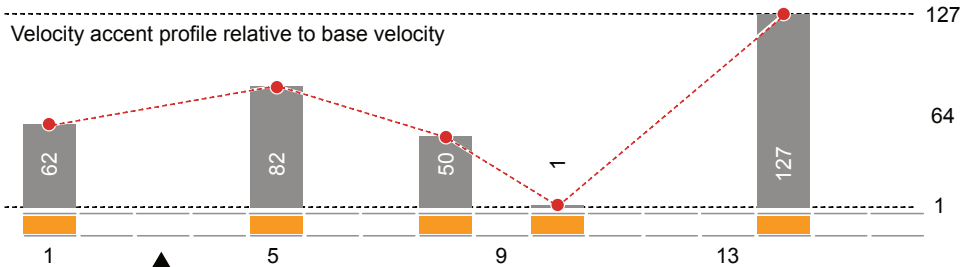
4 Rhythmic Variation

4.4 Velocity Accents

While velocity sets the base for all notes, accents control how much variation is applied to the velocities, giving a more natural feel. The amount of variation is controlled by (ACCENT) and the actual variation shape by the selected (GROOVE) template. Accents therefore operate in conjunction with the groove function and relative to the current velocity setting.

Accent View Mode.

WHITE
Accent Hi-Res

PINK
Groove Tempo x2

Accent View
Hold (ACCENT). Double tap (ACCENT) to retain the value button display.

ORANGE
Accent - Coarse

-                    +

PINK
Groove Tempo /2

The top row of buttons / illumination represents fine changes to the accent amount. Bottom row of buttons represents the coarse Bi-Polar adjustment of the accent amount. The pattern is inverted between left and right. The pink buttons affect the groove tempo.

5 Pulses / Accents Full Amount

Velocity accent profile relative to base velocity

127

64

1

62   82   50   1   127

1   5   9   13

Accent
Amount of groove applied to the velocity profile

Agogo   Timbales   Congas   Bongo

Saw   Triangle   Sine   Pulse   CV Input
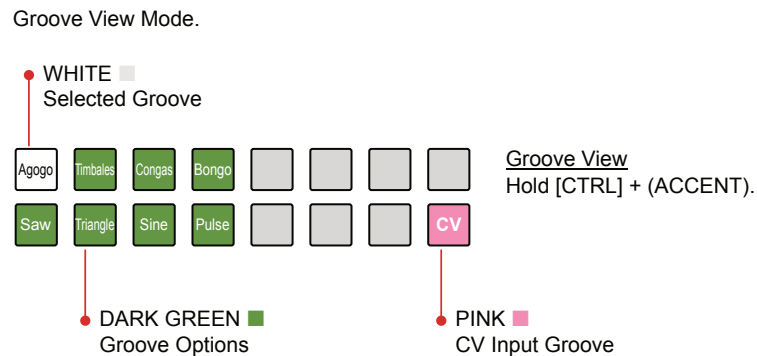
Groove
Selected groove template is assigned to the velocity profile of the track

4.5 Groove Templates

Groove is a predefined shape template that is applied to the velocity of a track. The velocity characteristics are applied from either of the 4 preset groove shapes or from the 4 wave shapes, 8 in total. An additional option for velocity and timing control is also available from the CV Mod input.

Groove View Mode.

WHITE ◻
Selected Groove

| Agogo | Timbales | Congas | Bongo | | | | |
| Saw | Triangle | Sine | Pulse | | | | CV |

Groove View
Hold [CTRL] + (ACCENT).

DARK GREEN ◼
Groove Options

PINK ◼
CV Input Groove

▍ APPLYING A GROOVE AND ACCENT

1. Select the pattern and track.

2. To view the current groove setting, Hold **[CTRL]** + Press **(GROOVE)**. Default is Agogo Groove indicated by the WHITE ◻ **[VB1]** value button. Other options are shown lit DARK GREEN ◼ or PINK ◼ for CV Input.

3. To select the groove template;

    •   While displaying the groove page, Press **[VB1]** - **[VB4]** to select a preset groove template or **[VB9]** - **[VB12]** for the wave shape presets. Most visual method.

    •   Hold **[CTRL]** + Turn **(GROOVE)**. Changes template on each 'click'.

    •   Hold **[CTRL]** + Press & Turn **(GROOVE)**. This change template on each rotary 'click'. Fast method also visualises settings.

4. To change the amount of groove applied to the track;

    •   While displaying the accent page, Press **[VB1]** - **[VB7]** to select a fine adjustment or **[VB9]** - **[VB15]** for a bi-polar course amount. Value buttons **[VB8]** & **[VB16]** affect the groove tempo and essentially the velocity behaviour

    •   Turn **(ACCENT)**. This changes the amount iteration on each rotary 'click'. Fastest method.

    •   Hold + Turn **(ACCENT)**. Fast method also visualises settings.

4 Rhythmic Variation

A library of 8 preset groove template can be applied to a track velocity. These are selectable from the (GROOVE) value buttons. The amount of groove applied is controlled by (ACCENT).

Velocity Profile

Velocity level per pulse in the track

127

64
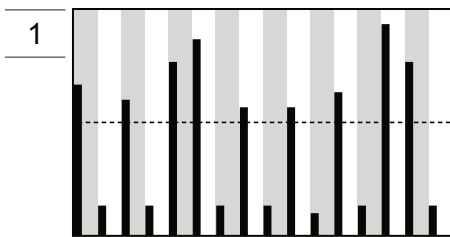
1

1   16

Velocity range 1-127. Accent sets amount
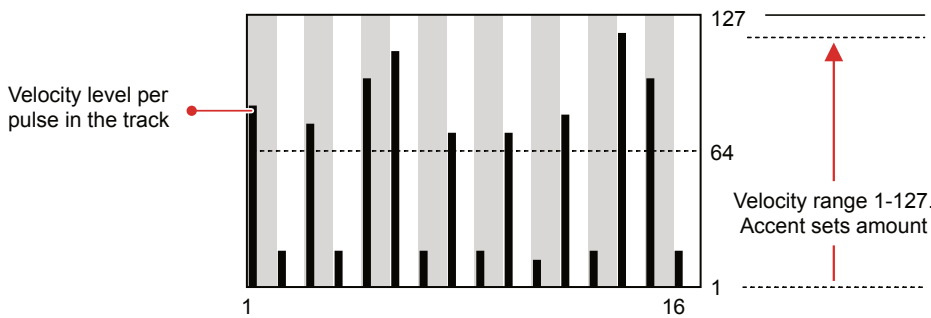
Profile shape is applied to the track. The actual velocity levels per step are varied and also based on the accent amount.

Preset Groove Profiles

Agogo
Value Button [VB1]

1

Timbales
Value Button [VB2]

2
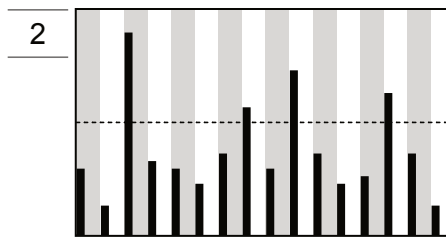
Congas
Value Button [VB3]

3
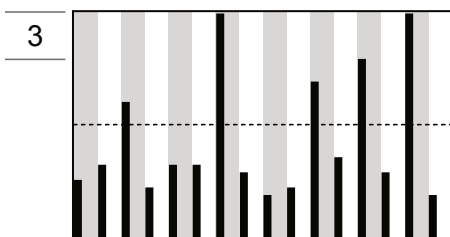
Bongo
Value Button [VB4]

4
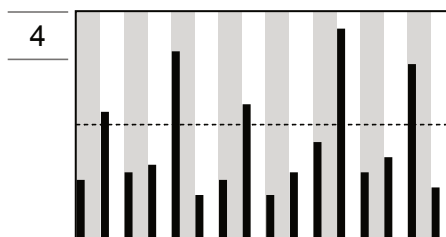
Wave Shape Groove Profiles

Saw
Value Button [VB9]

5
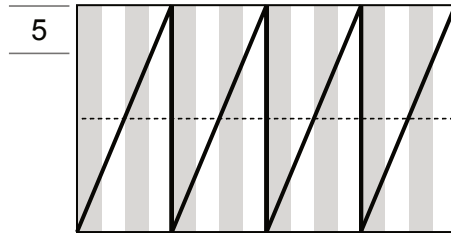
Triangle
Value Button [VB10]

6
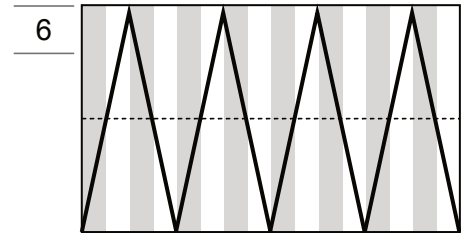
Sine
Value Button [VB11]

7
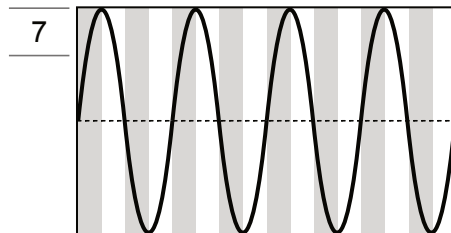
Pulse
Value Button [VB12]

8
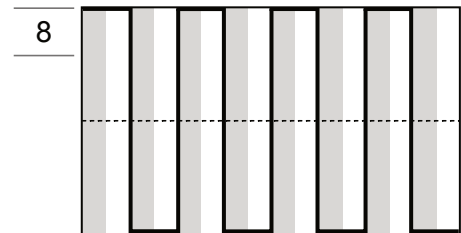
CV Input Groove Profile

CV Input
Value Button [VB16]
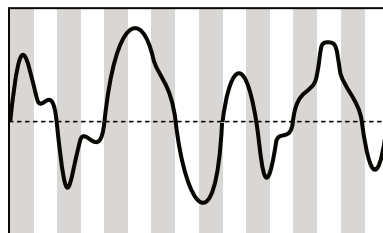
Groove profile is generated from the CV MOD input. The profile can control velocity and timing. The Illustration provided shows an example profile only.

Groove and Accent are controlled by the same physical knob. Groove is the secondary function accessible using [CTRL].

4 Rhythmic Variation

4.6 Note Timing Overview

The rhythmic timing of notes in a track can be adjusted. This will introduce a swing-like element and humanise the track groove. The two options available for timing are (**TIMING**) and (**DELAY**).

Timing

Timing is a micro-timing function that moves some notes off the grid earlier or later in the track to generate a less rigid, shuffle feel to the rhythm. Not all notes are affected and the note selected behaviour can be adjusted. The timing parameter controls the amount of note shift on the grid.

Delay

Delay is applied to the entire track. Delay can be applied positively or negatively to affect the track in note value unit divisions.

Timing Example
Track division with 2nd subdivision note shifts.
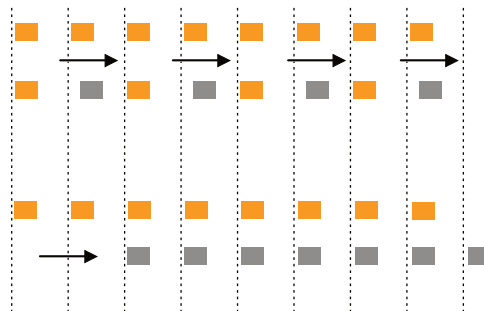
Delay Example
Delay applied to the entire track.

Timing and Delay are controlled by the same physical knob. Delay is the secondary function accessible using [CTRL].

4.7 Micro-Timing

Timing shifts specific notes early or late by stretching the grid. Other notes are unaffected. The amount of micro-timing can be adjusted using (TIMING) while the behaviour of the notes adjusted is set by the PINK ■ division buttons [VB8] or [VB16].

Timing View Mode.

WHITE ■
Timing - Fine

PINK ■
x2 Division

Timing View
Hold (TIMING) or Double tap (TIMING) to lock the view.

- Early

ORANGE ■
Timing - Coarse

+ Late

PINK ■
x4 Division
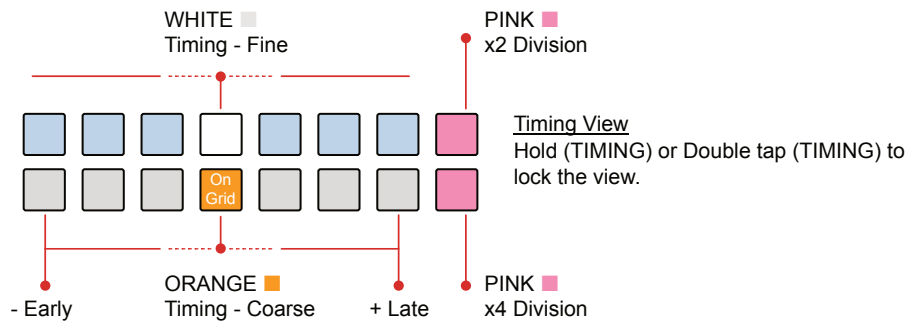
Illustration shows default 'On-Grid' timing i.e. no micro-timing adjustment.

Example: Extreme timing settings, on x1 division.

Min Timing

MIN

1   5   9   13

Max Timing
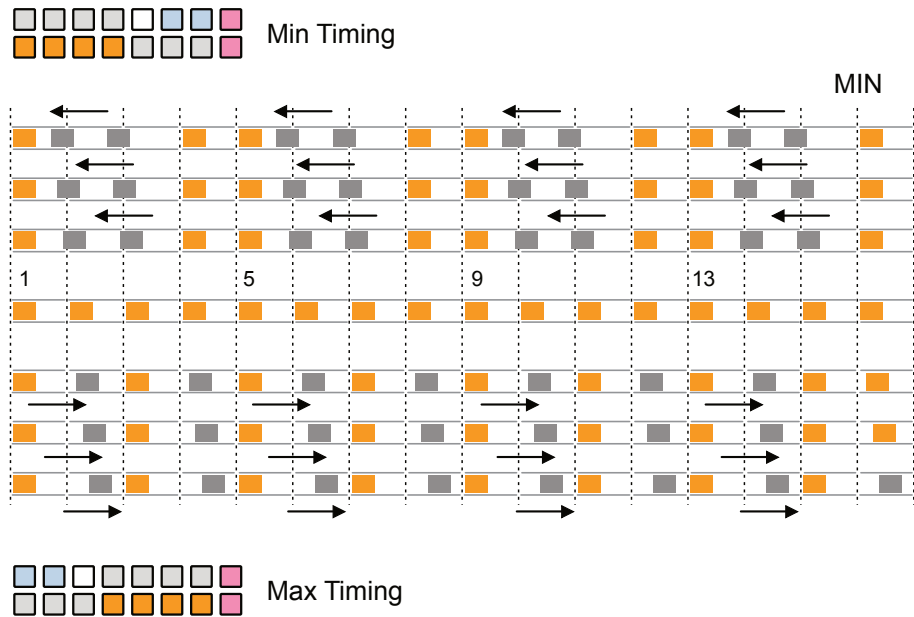
4 Rhythmic Variation

▌ APPLYING MICRO-TIMING TO A TRACK

1. Select the pattern and track.

2. To view the current timing setting, Hold **(TIMING)**. Also double Press **(TIMING)** to lock value button timing display.

3. To adjust micro timed notes earlier on the grid;

   • While displaying the timing page, Press **[VB9]** - **[VB11]** to coarsely set the defined notes early on the grid and Press **[VB1]** - **[VB7]** to finely adjust. No timing adjustment when **[VB4]** & **[VB12]** are selected. Most visual method.

   • Turn **(TIMING)** counter-clockwise. This changes the micro-timing iteratively each rotary 'click'.

   • Press & Turn **(TIMING)** counter-clockwise. This changes the micro-timing iteratively each rotary 'click'.

4. To adjust micro timed notes later on the grid;

   • While displaying the timing page, Press **[VB13]** - **[VB15]** to coarsely set the defined notes early on the grid and Press **[VB1]** - **[VB7]** to finely adjust. No timing adjustment when **[VB4]** & **[VB12]** are selected. Most visual method.

   • Turn **(TIMING)** clockwise. This changes the micro-timing iteratively each rotary 'click'. Slowest method and least visual.

   • Press & Turn **(TIMING)** clockwise. This changes the micro-timing iteratively each rotary 'click'. Slowest method but more visual.

5. To change the grid division and hence defined note behaviour;

   • While displaying the timing page, Press **[VB8]** to increase the note division x2.

   • While displaying the timing page, Press **[VB16]** to increase the note division x4.

   • When both are lit same colour PINK ■ the default x1 division is set.

4.8 Note Delay

Delay can adjust all notes in a track to be triggered earlier or later within the note grid. The note division value can be selected for shifting notes.

Delay View Mode.

- Early
WHITE
Fine tune from offset
+ Late

Delay View
Hold [CTRL] + (DELAY).

| 1/4 | 1/8 | 1/16 | On Grid | 1/16 | 1/8 | 1/4 | | |

- Early
ORANGE
Delay Offset
+ Late
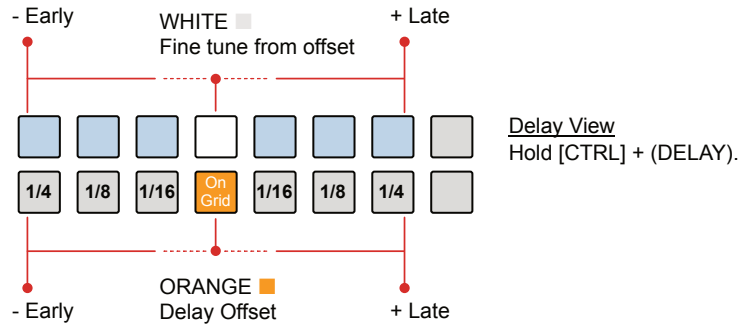
Example: Extreme delay settings.

Delay Earlier -

Early

1/4

1/8

1/16

1   5   9   13

1/16

1/8

1/4

Late

Delay Later +
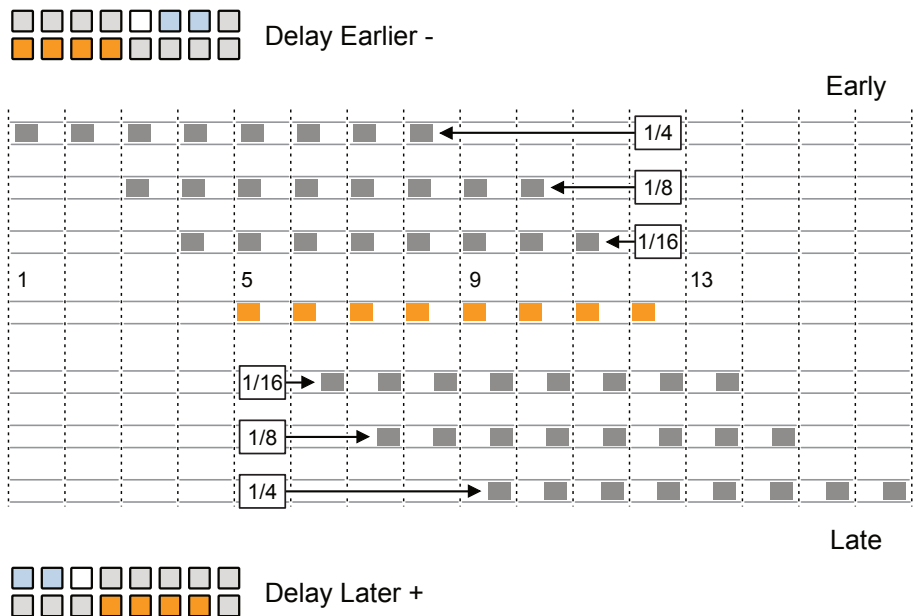
4 Rhythmic Variation

■ APPLYING TRACK NOTE DELAY

1. Select the pattern and track.

2. To view the current delay setting, Hold [CTRL] + (DELAY).

3. To adjust all notes earlier on the grid;

   • While displaying the delay page;

     • Press [VB11] to adjust notes earlier by 1/16th iteration.

     • Press [VB10] to adjust notes earlier by 1/8th iteration.

     • Press [VB9] to adjust notes earlier by a 1/4th iteration.

     • Press [VB1] - [VB3] or [VB5] - [VB7] to adjust fine with respect to the note value selected.

   • Hold [CTRL] + Turn (DELAY) counter-clockwise. This changes the delay amount iteratively each rotary 'click'.

   • Hold [CTRL] + Press & Turn (DELAY) counter-clockwise. This changes the delay iteratively each rotary 'click'. Slowest method but more visual.

4. To adjust all notes later on the grid;

   • While displaying the delay page;

     • Press [VB13] to adjust notes later by 1/16th iteration.

     • Press [VB14] to adjust notes later by 1/8th iteration.

     • Press [VB15] to adjust notes later by a 1/4th iteration.

     • Press [VB1] - [VB3] or [VB5] - [VB7] to adjust fine with respect to the note value selected.

5. With [VB4] & [VB12] selected the notes will be on grid and no delay applied to any notes.

4.9 Probability

The final function in the groove section is the Probability parameter. This sets whether an active note will be played and is audible or whether the note will be silenced. The chance of the note being silenced is based on the probability parameter which increases or decreases the chance that a note is not played. This is a bi-polar setting which operates on any note or repeat or on pulses plus the respective repeats. This can introduce an organic and unpredictable variation, creating space in a rhythmic pattern.

Probability View Mode.
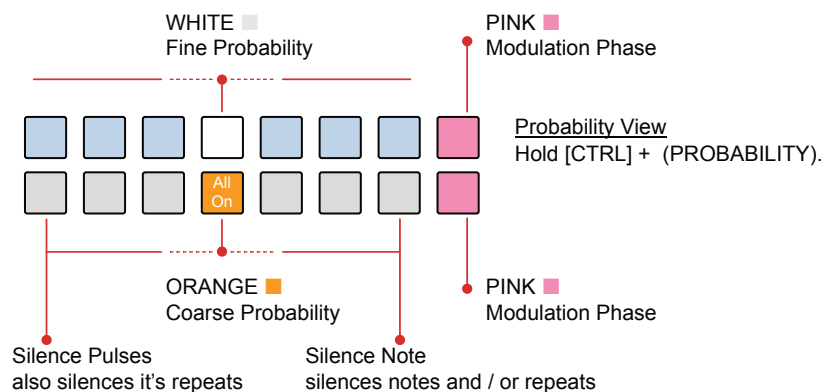
Illustration shows default - 0% probability i.e. all notes will play as normal. At maximum on each side, the probability will be 100% meaning notes will be totally silenced.

Range -100% to 0

The range on the left i.e. bottom row, ORANGE ■, value buttons [VB9] - [VB11] or adjusted by [CTRL] + Turn (PROBABILITY) Counter-clockwise, represents the chance that a pulse is silent. This is also adjusted as fine tuning using the top row value buttons. When a pulse is silent its associated repeats will also be silenced.

Range 0 to +100%

The range on the right i.e. bottom row, ORANGE ■, value buttons [VB13] - [VB15] or adjusted by [CTRL] + Turn (PROBABILITY) Clockwise, represents the chance that a note is silent. This could be the main trigger note and / or a repeat note. This is also adjusted as fine tuning using the top row value buttons.

Modulation Phase

Modulation phase, adjusted by PINK ■, [VB8] and [VB16] buttons adjusts the random modulation phase, i.e. which notes are selected to silence.

4 Rhythmic Variation

Probability Examples

16 Step Pattern unaffected by Probability

5 Pulses + 1 Repeat

1   5   9   13

Probability - Approx +30%

5 Pulses + 1 Repeat

1   5   9   13

  Probability settings to the right - bottom row or clockwise of probability knob silences notes + repeats or repeats.

Probability - Approx -30%

5 Pulses + 1 Repeat

1   5   9   13

  Probability settings to the left - bottom row or counter-clockwise of probability knob will always silences repeats if a pulse is silenced.
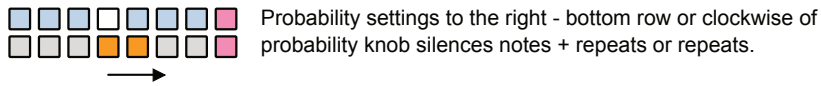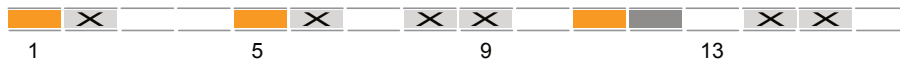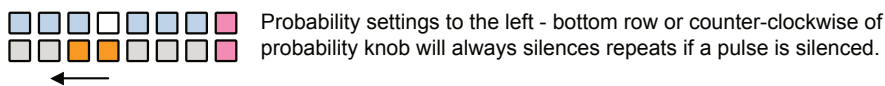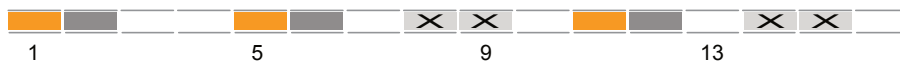
Probability - 100% any direction

5 Pulses + 1 Repeat

1   5   9   13

 +100%   -100%
Or
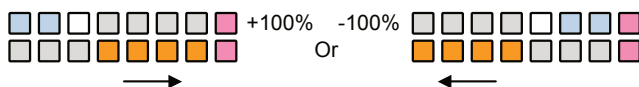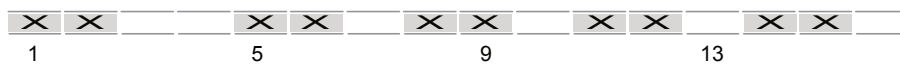
The notes selected for silencing can be changed by the modulation phase value buttons [VB8] and [VB16]. This changes the modulation phase of random selection of notes. Random modulation is linked to the Random controls and hence turning this control will also affect the probability modulation.

NOTES

▌ APPLYING NOTE PROBABILITY TO A TRACK

1. Select the pattern and track.

2. To view the current probability setting, Hold **[CTRL]** + (**PROBABILITY**).

3. To increase the chance of pulse notes and repeats being silenced;

   • Hold **[CTRL]** + (**PROBABILITY**) to view the probability page. Press **[VB11]** to increase chance of notes being silenced. Press **[VB10]** or **[VB9]** to increase the chance even further. The further left, the higher the probability. Press **[VB1]** - **[VB7]** to fine tune. Fastest method for editing.

   • Hold **[CTRL]** + Turn (**PROBABILITY**) Counter-clockwise. This changes the chance amount iteratively each rotary 'click'.

   • Hold **[CTRL]** + Press & Turn (**PROBABILITY**) Counter-clockwise. This changes the chance iteratively each rotary 'click'. Slowest method but more visual.

4. To increase the chance of notes and / or repeats being silenced;

   • Hold **[CTRL]** + (**PROBABILITY**) to view the probability page. Press **[VB13]** to increase chance of notes / repeats being silenced. Press **[VB14]** or **[VB15]** to increase the chance even further. The further right, the higher the probability. Press **[VB1]** - **[VB7]** to fine tune. Fastest method for editing.

   • Hold **[CTRL]** + Turn (**PROBABILITY**) Clockwise. This changes the chance amount iteratively each rotary 'click'.

   • Hold **[CTRL]** + Press & Turn (**PROBABILITY**) Clockwise. This changes the chance iteratively each rotary 'click'. Slowest method but more visual.

5. To adjust which notes are selected to silence i.e. random phase modulation, Hold **[CTRL]** + (**PROBABILITY**) + **[VB8]** or **[VB16]**.

Velocity and Probability are controlled by the same physical knob. Probability is the secondary function accessible using [CTRL].

4 Rhythmic Variation

4.10 Note Repeater Basics

Note repeater is a function that works in conjunction with pulse. A repeat of the note can be created when each pulse is triggered, echoing the note afterwards. The two most basic parameters of the note repeater are 'repeats' and 'time', although other parameters also affect the repeater. The 'offset' and 'pace' parameters are two additional creative repeat options.
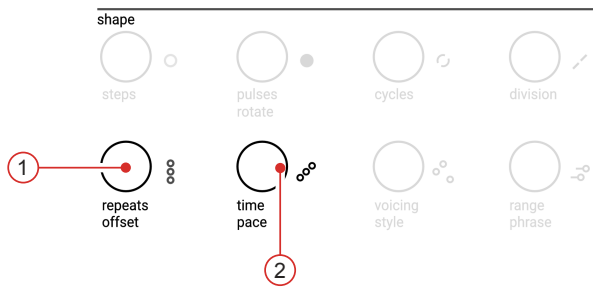
	Parameter	Turn	Push	Ctrl + Turn
1	repeats offset	Sets the number of repeats triggered a pulse	View / change repeats from the value buttons.	Adjusts the velocity offset ramp up or down.
2	time pace	Sets the note value division for the repeats.	View / change time division on value buttons.	Adjusts the repeat acceleration / deceleration.

How does the note repeater work?

A triggered pulse note will be repeated based on the number of 'Repeats' assigned and at a note value based on 'Time', the note division value of the repeats. The number of repeats available ranges from 0-48 and with repeats knob fully clockwise the repeat count is set to infinite. Any modulation applied to a pulse is also echoed to the repeats.
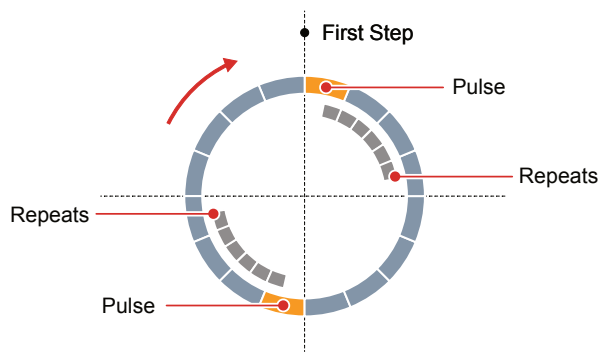
Illustration shows default pulse note division set by 'Division' at 1/16th and default repeat note division set by 'Time' at 1/32nd.

Defined Repeats (Range between 0 - 48)

16 Step Pattern

2 Pulses (Division 1/16th)
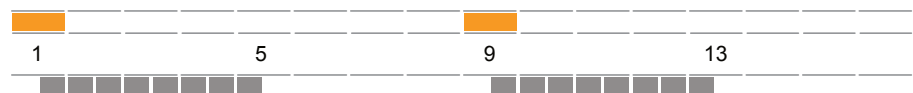
8 Repeats (Time 1/32nd)

Infinite Repeats (Repeat knob fully clockwise)

16 Step Pattern

2 Pulses (Division 1/16th)
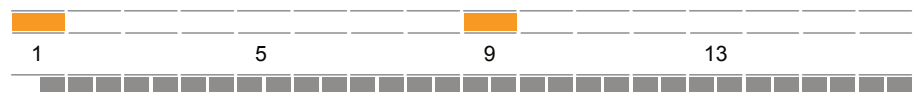
Infinite Repeats (Time 1/32nd)

4 Rhythmic Variation

4.11 Note Repeats

The number of repeats, set by (**REPEATS**) ranges from 0 - 48 and finally to an infinite number. Repeats generally follow the same characteristics as the triggered pulse note. Illustration below indicates number of repeat and not the total number of pulses

Repeats View Mode.

WHITE ▫
Selected Repeats - Default 0

PINK ▫
Choke Mode

| 0 | 1 | 2 | 3 | 4 | 5 | 6 |

Repeats View
Hold (REPEATS) or Double tap (REPEATS) to lock the value button view.

| 0-6 | 7-13 | 14-20 | 21-27 | 28-34 | 35-41 | 42-48 |

ORANGE ▪
Selection Range

PINK ▪
Tail Mode

BRIGHT BLUE ▪
Infinite Repeats
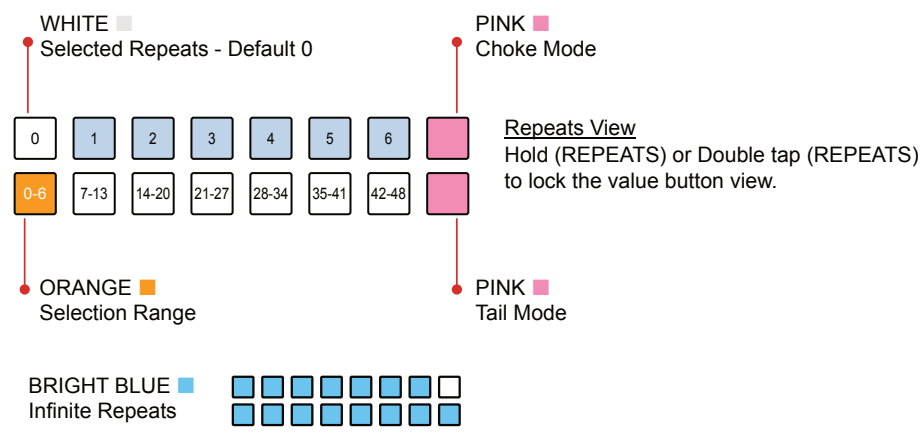
The last / highest button selection or when the repeats knob is fully clockwise will set the pulse repeats to infinite. This is displayed as blue on the value buttons.

▌ CREATING REPEATS

1. Select the pattern and track.

2. To view the current repeat setting, Hold or double tap (**REPEATS**).

3. To change the number of repeats;

   • While viewing repeats page, Press [VB9] - [VB15] to select the range of repeats to select from i.e. [VB9] sets the top row of buttons as 0-7 repeats, [VB15] selects the top row of buttons as 43-48-infinite repeats. The precise number selected with [VB1] - [VB7].

   • Turn (**REPEATS**) to select the number of repeats iteratively on each rotary 'click'.

   • Hold & Turn (**REPEATS**) to select the number of repeats iteratively on each rotary 'click'. Slowest method and also visualises values.

4. To select between repeat behaviour, Press [VB8] to select Choke mode or Press [VB16] to select Tail mode. The brighter PINK ▪ button will indicate the active mode. Choke is default mode.

4.12 Note Repeat Time

The note repeater time division is set by (TIME). This works in conjunction with the repeats parameter. The length of notes set by (SUSTAIN) is also applied to the repeated notes.

Time View Mode.

BLUE GREY ▪
Quadruplets

WHITE ▪
Selected division

| 1/1 | 1/2 | 1/4 | 1/8 | 1/16 | 1/32 | 1/64 | |
| | | 1/3 | 1/6 | 1/12 | 1/24 | 1/48 | |

OFF
Inactive Option

BLUE ▪
Triplets

Time View
Hold (TIME). Double tap (TIME) to retain the value button display.
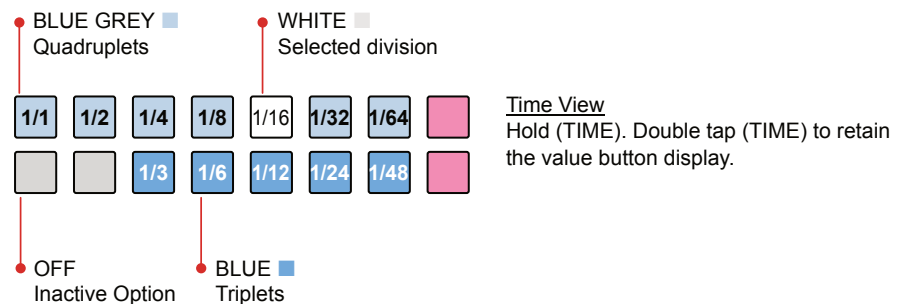
▌ SELECTING A TIME SETTING

1. Optionally lock the time view. Double tap (TIME). This is not essential but is good practice. Just holding (TIME) will temporarily view the state until the knob is released.

2. Value button state. The active time is displayed on a value button illuminated WHITE ▪. Top row BLUE GREY ▪ Indicates available quadruplet divisions and bottom row BLUE ▪ available triplets.

3. Selecting a time option. Turn (TIME) to quickly view and change. When in locked division view, Press [VBx] Where 'x' is value button 1-7 or 11-15 to select row and division.

4. A free running time option can also be set using [VB16] then turning (TIME). The value button will flash WHITE ▪ to indicate free a time setting is applied.

Division Options	Group	Value Button	Option Colour
1/1, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64	Quadruplets	1, 2, 3, 4, 5, 6, 7	BLUE GREY ▪
1/3, 1/6, 1/12, 1/24, 1/48	Triplets	11, 12, 13, 14, 15	BLUE ▪

New pulses triggered will cut off any currently playing repeats or notes. The repeats behaviour is managed by the choke or tail setting. Division is a macro that also affects time and rate

4 Rhythmic Variation

4.13 Choke and Tail Behaviour

The behaviour of the repeats when a new trigger occurs is governed by the Choke or Tail options. This is set within the repeats parameter view which can be displayed by holding or double pressing (REPEATS). Choke curtails the repeats when a new pulse is triggered while Tail allows new repeats to be overlaid on the existing repeats.

Option	Command	Description
Choke Mode	[VB8] - Default	Each new pulse chokes the previously created repeats from the prior pulse. Voicing style is applied to both pulses and repeats equally.
Tail Mode	[VB16]	Repeats triggered from a previous pulse are overlaid with repeats from the new pulse. Voicing style is applied to pulses and voicing is reset on each new pulse.

Choke Mode Behaviour - Default [VB8] On

16 Step Pattern

3 Pulses (Division 1/16th)
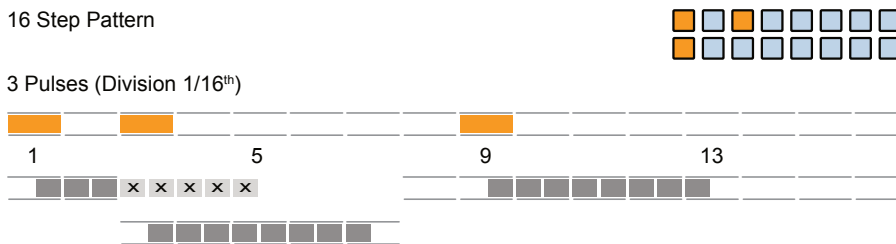
8 Repeats (Time 1/32nd)

Pulses are curtailed when a new pulse is triggered. The new triggered pulse repeats will continue as normal unless choked by another new pulse.

Tail Mode Behaviour - Option [VB16] On

16 Step Pattern

3 Pulses (Division 1/16th)
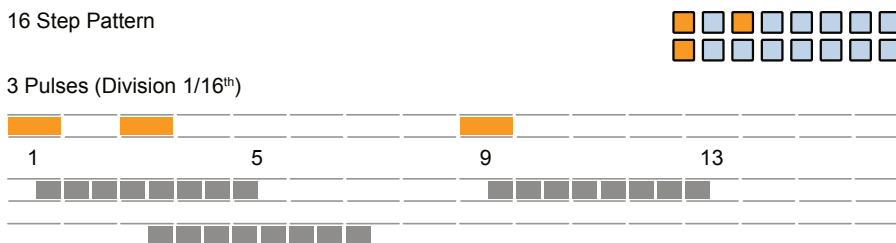
8 Repeats (Time 1/32nd)

Existing pulses are overlaid when a new pulse is triggered. The new triggered pulse repeats will continue as normal along with the previous repeats.

4.14 Note Repeat Offset Velocity

The offset and pace parameters add even more creative options in the use of the repeater. Offset operates on the velocity level of the repeats by generating a rising ramp up or falling ramp down of the first set of repeats.

Offset View Mode.

WHITE ▢
Selected Offset

Offset View
Hold [CTRL] + (OFFSET).

Off

ORANGE ▧
Coarse Probability

Ramp Up   Ramp Down
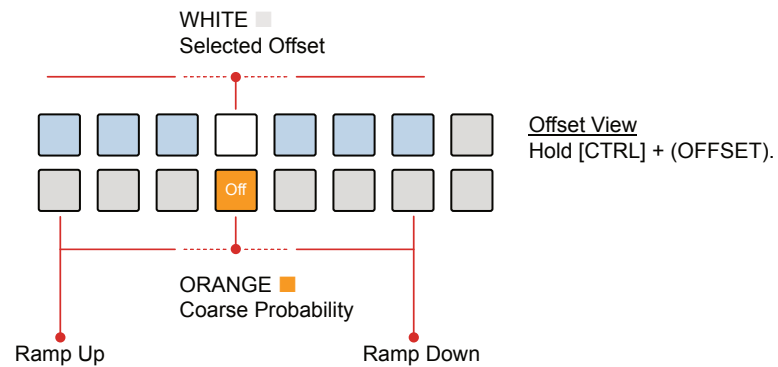
The velocity curves are linear but the slope and direction will be based on the setting applied. Default position for offset will apply no velocity ramp to the note repeats.

The ramp will start from the current base velocity and ramp to the maximum 127 level based on the slope selected.

Offset Max
Steep Slope Up

Offset Min
Shallow Slope Up

Offset Off
Base Velocity

The ramp will start from the base velocity and ramp to the minimum 0 level based on the slope selected.

Offset Max
Steep Slope Down

Offset Min
Shallow Slope Down

Offset Off
Base Velocity

Offset is the secondary function available on the (REPEATS) Knob, accessible using [CTRL].

The parameter selects the amount of slope applied as the incline for each of the up or down velocity ramps. The starting point is the base velocity whether the ramp drives up or down.

Example: Ramp Up - Repeat Velocity Offset

1 Pulse - 12 Repeats (1/16th Division & 1/16th Time)

Velocity profile

29   49   69   89   109   127   127   127   127   127   127   127

127

64

1

1   5   9   13

In this example a base velocity of 29 is set and a ramp up with a steep incline. Any repeats that continue after the ramp cycle completes will maintain the maximum or minimum level until the next pulse is triggered.

▌ CREATING VELOCITY OFFSET RAMPS

1. Select the pattern and track.

2. To view the current offset setting, Hold **[CTRL]** + Press **(OFFSET)**.

3. To change the offset;

    •   While viewing offset page, Press **[VB9]** - **[VB11]** to adjust ramp down of repeats. Press **[VB12]** - **[VB15]** to adjust ramp up of repeats. The precise number selected with **[VB1]** - **[VB7]**.

    •   Press **[CTRL]** + Turn **(OFFSET)** to iteratively change the offset on each rotary 'click'. Clockwise for ramp up and counter-clockwise to ramp down.

    •   Press **[CTRL]** + Hold & Turn **(OFFSET)** to select the offset iteratively on each rotary 'click'. Clockwise for ramp up and counter-clockwise to ramp down. Slowest method but most visual.

4.15 Note Repeat Pace

While offset operates on velocity, pace focusses on the timing of repeats. Pace is a bi-polar control and adjusts the timing interval of the acceleration or deceleration of the repeated notes.

Pace View Mode.

WHITE ▫
Fine Tune & Select Pace

Pace View
Hold [CTRL] + (PACE).

Off

ORANGE ◼
Coarse

Acceleration   Deceleration
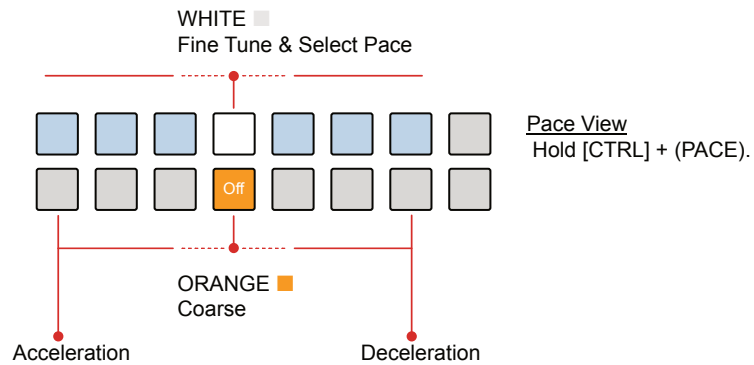
The parameter adjusts the acceleration pace of repeat notes or deceleration pace of repeat notes based on the bi-polar settings. Default position for pace will apply no changes where repeats stay linear.

The repeats start quickly, short time divisions and expand to slower, wider time divisions over the duration.
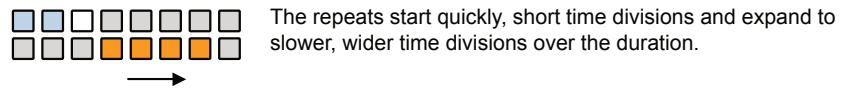
Deceleration Max
Speed Up

No Pace
Zero Deceleration

The repeats start slowly, longer time divisions and contract to faster, shorter time divisions over the duration.
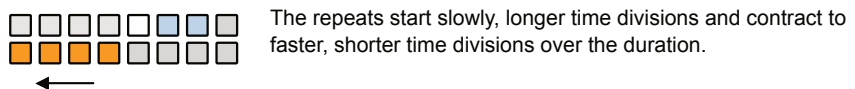
Acceleration Max
Speed Up

No Pace
Zero Acceleration

Pace is the secondary function available on the (TIME) Knob, accessible using [CTRL].

4 Rhythmic Variation

The parameter selects the speed of acceleration or deceleration applied as the behaviour for each of the pace directions. The pace operates across the repeat number.

▌ CHANGING REPEAT ACCELERATION OR DECELERATION PACE
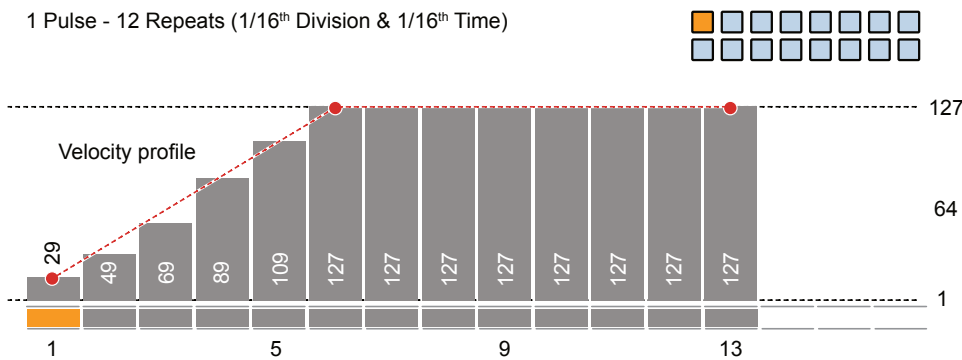
1. Select the pattern and track.

2. To view the current offset setting, Hold **[CTRL]** + Press **(PACE)**.

3. To change the pace;

    • While viewing pace page, Press **[VB9]** - **[VB11]** to adjust the acceleration of repeats. Press **[VB12]** - **[VB15]** to adjust the deceleration of repeats. The precise number can be selected with **[VB1]** - **[VB7]** value buttons.

    • Press **[CTRL]** + Turn **(PACE)** to iteratively change the pace setting on each rotary 'click'. Clockwise for deceleration and counter-clockwise to acceleration.

    • Press **[CTRL]** + Hold & Turn **(PACE)** to select the pace setting iteratively on each rotary 'click'. Clockwise for deceleration and counter-clockwise to acceleration. Slowest method but most visual.

4.16 Note Repeat Stop

Repeats can be set for a track from a single note to a continuous note train. The option to stop repeats playback is also available if required. The [CLEAR] Button will illuminate PINK ■ within the repeats view while repeated notes are being played.

▌ STOPPING REPEATS

1. Ensure the pattern and track with the playing repeats is active.

2. Double tap **(REPEATS)** to lock the repeats view.

3. The **[CLEAR]** button will illuminate PINK ■ while the repeat notes are being played.

4. Press **[CLEAR]** to stop the tracks repeats. This curtails the current repeat chain playback but future repeats will be triggered in the cycle.

5

Melodic Structures

The first part of this book concentrates on the structural elements of using T-1. It is then followed by building tracks even further with rhythmic components, patterns and then onto rhythmic variations. Tracks and sequences can be built up from these basic foundations and start to evolve with intricate and complex patterns. The next area of coverage focusses on melodic elements, adding more to the patterns already created to bring pitch and note based functions into the mix. This section starts with the addition of melodic structural parts with scales and root and also introduces concept of the pitch menu where notes can be added and chords created. The option to select from a collection of scales and adjust the root note is possible. User scales can even be created and used within the T-1 perhaps intentionally drifting away from traditional musical structures. Basic transposition is covered with the harmony function which allows

transpositions and note variations to compliment the basic structures already created. These structures help to evolve a pattern beyond its rhythmic foundation and helps to build the melodic parts into the arrangement section. Pitch and note sequences are the start in developing melodic patterns, adding even more versatility and creative options. The arrangement can be developed by working towards the creation of a complete 'tune' and production of a full song.

5 Melodic Structures

5.1 Arpeggio Sequencing Concept

Euclidean sequencing is a generative model which creates rhythmic note pulses. Creating melodic patterns requires the introduction of pitch based pattern generation. One of the models used to develop melodies in T-1 is Arpeggiation. T-1's parameters and setting build further onto these models.

What is an Arpeggio?

An Arpeggio is a musical term and is often described as a broken chord. This means that a series of notes assembled as a chord, for example chord C Major is divided into it's individual notes C - E - G for playback. An arpeggiator would play these individual notes in a predefined order across a set octave range. This creates interesting repetitive patterns.

Chord

Arpeggio - Example Up/Down within 1 octave

Pulses
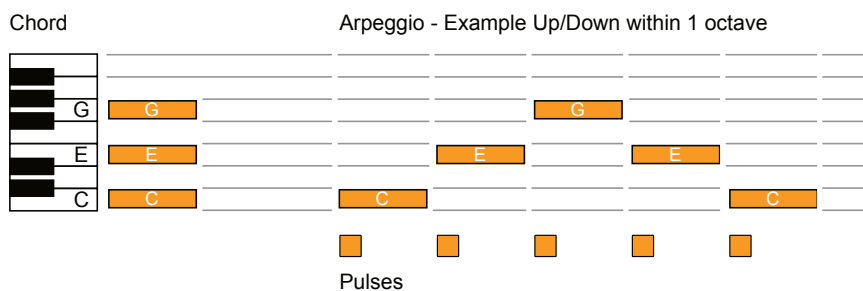
How are Arpeggios Applied in T-1?

There are many parameters that contribute to building advanced melodic structures onto a Euclidean or step based pattern in T-1. At the most basic level, building Arpeggios would start in the TONAL section with the Pitch parameter. T-1 goes beyond basic Arpeggios and can generate more advanced melodies. Pitch allows the assignment of notes into a chord. In the tonal part of the SHAPE section voicing, range and style allow arpeggios and more advanced melodies to be built.

- Pulses: A pulse is a note event which will trigger in a rhythmic sequence. The melodic notes would be driven from these pulse events and associated triggers.

- Pitch: Allows melodic notes to be selected into a chord using a defined scale. These are the notes which will generate the melody.

- Voicing & Range: Amount of pitch variation applied.

- Style & Phrase: Behaviour of the pitch variation applied.

5.2 Tonal Section Overview.

The first consideration when expanding a Euclidean or Step pattern to pitch based melodies is the Tonal section. This consists of 4 Parameters that set the foundation for melodic compositions. These are Pitch, Harmony, Scale and Root.
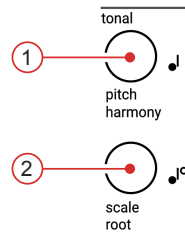
	Parameter	Turn	Push	Ctrl + Turn
1	pitch harmony	Transpose existing notes equally in the scale.	Chromatic keyboard view. Shows available and entered notes.	Moves existing note pitches one note to create harmonies
2	scale root	Select one of the 8 available scales.	Scale option view. Shows current scale.	Sets the root note in the selected scale

5 Melodic Structures

5.3 Pitch and Harmony.

Pitch

Pitch is the first step in building melodic elements. The Pitch function assists in the assembly of notes into a group or chord. Notes available to enter are based on the selected scale. The Pitch parameter knob can then be used to transpose the notes up or down within the scale.

Pitch View Mode.

The pitch view is a unique function which visualises a chromatic keyboard on the value buttons. To access, Hold (PITCH) or Double Press (PITCH) to lock the display.

BLUE ▪   BLUE GREY ▪   PINK ▪
Black Keys   Unavailable Notes in the Scale   Octave Up

	C#	D#		F#	G#	A#	
C	D	E	F	G	A	B	

ORANGE ▪   WHITE ▪   PINK ▪
Active Notes   White Keys   Octave Down

Default is C3 - B3

Octave Down ← | C# | D# | | F# | G# | A# | Octave Up →

C   D   E   F   G   A   B
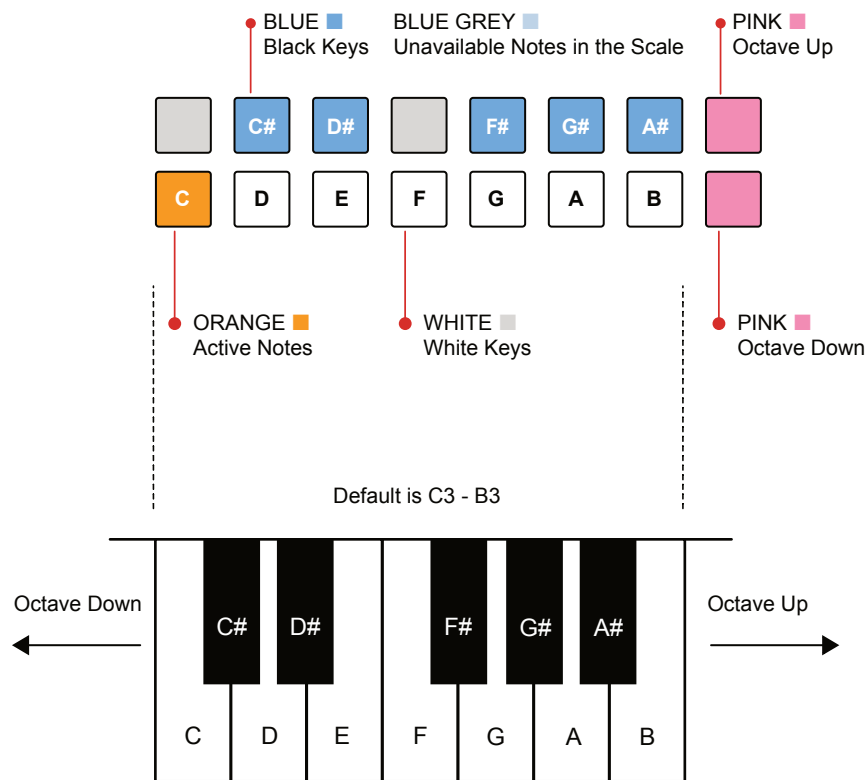
Add or remove notes to/from the group by pressing [VBx] when in pitch view, The 'x' represents the value button for the note selected. Active notes are lit orange. Notes which are not available in the selected scale cannot be selected.

A maximum of 8 notes can be transmitted from T-1 simultaneously.

Examples shown use the chromatic scale, which contains all 12 notes. A Tone is the interval between whole notes, for example D to E or F to G. A semi-tone is the interval between half notes, for example D to D# or E to F.

NOTES

▌ CREATING A PITCH CHORD / GROUP

1. Chromatic keyboard view. Double Press (PITCH) to lock the keyboard view on the value buttons.

2. Add notes. Press [VBx], where 'x' is a value button representing a note in the scale. Multiple notes can be added simultaneously. Notes not in the scale are unavailable for selection.

     Example: D Major - Add notes D - F# - A = [VB10] - [VB5] - [VB14]

3. The octave range displayed can be changed up or down using the two PINK ■ modifier buttons [VB8] - Up and [VB16] Down. Notes can be added in the displayed page.

     Example: D Major7 - Add C# to the D Major - Page Up [VB2]

4. Remove notes. Press [VBx], where 'x' is a value button representing a existing note selected in the scale.

Octave Up C4 - B4
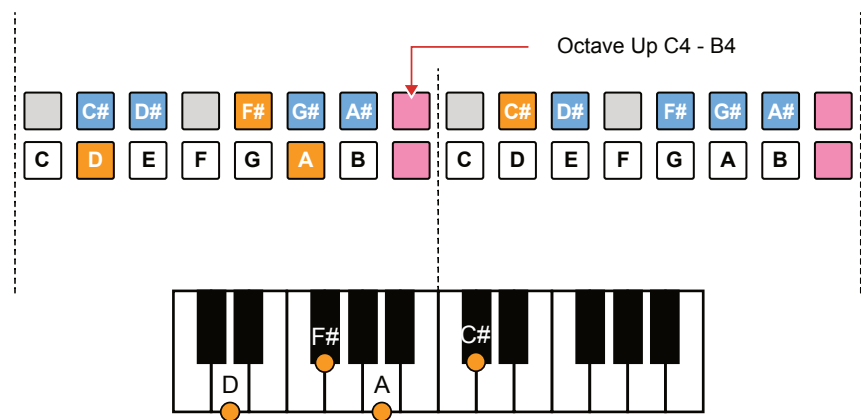
The modifier buttons shift the value button view up or down an octave each iteration. The modifier buttons will change colour to reflect the octave range selected.

	-5	-4	-3	-2	-1	Default	+1	+2	+3	+4	+5
	C-2 - B-2	C-1 - B-1	C0 - B0	C1 - B1	C2 - B2	C3 - B3	C4 - B4	C5 - B5	C6 - B6	C7 - B7	C8 - B8
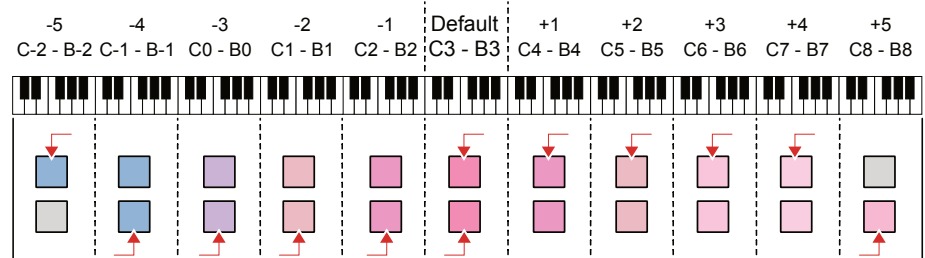
5 Melodic Structures

▌ CREATING AND REMOVING NOTES IN A PITCH CHORD / GROUP

1. Chromatic keyboard view. Double Press **(PITCH)** to lock the keyboard view on the value buttons.

2. Add notes. Press **[VBx]**, where 'x' is a value button representing a note in the scale. Notes not in the scale are unavailable for selection.

3. Add notes while deleting existing notes. Hold **[CLEAR]** + **[VBx]**, where 'x' is a value button representing a note in the scale. The new note is added while all other existing notes will be automatically be removed.

4. Remove notes manually. Press **[VBx]**, where 'x' is a value button representing a existing note selected in the scale.

The pitch knob transposes each note in a chord or note group for the selected track for each rotation 'click' of the Pitch knob. The notes will transpose to the next available note in the scale. This can be used to create variations in arrangements or can be used in live performances.

Also Pitch is useful when connecting to drum synths where notes will trigger specific drum sounds and offers a quick and easy way of aligning the tracks notes to the drum synth triggered notes.

Transpose +1 Octave
[CTRL] + [VB8]

+1 Octave

Transpose -1 Octave
[CTRL] + [VB16]

-1 Octave

Transpose Next Note
Turn (PITCH) Clockwise

+1 Note Up

Transpose Prior Note
Turn (PITCH) Counter Clockwise

-1 Note Down
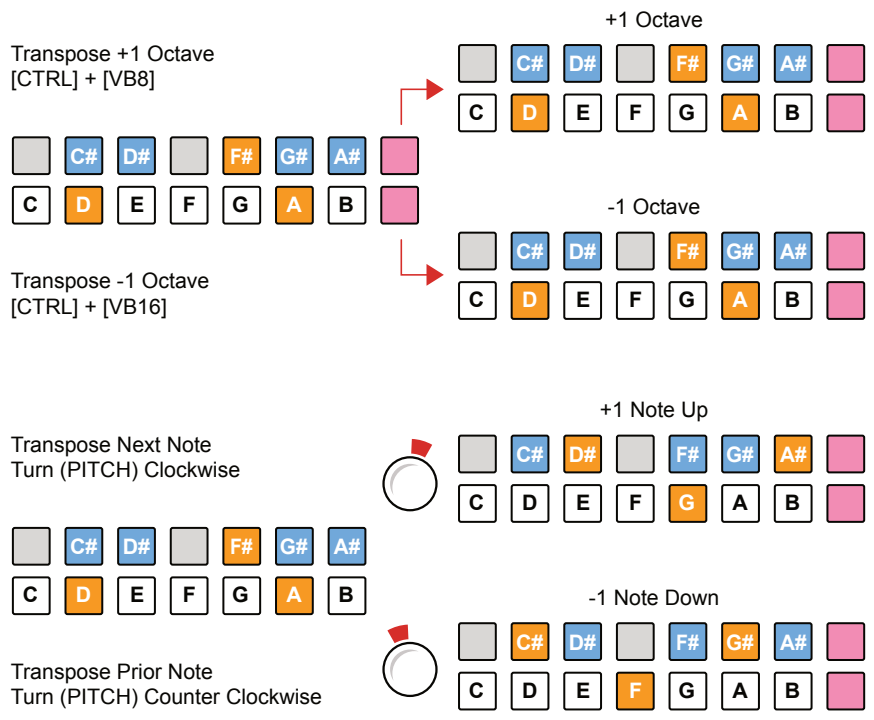
▍TRANSPOSING PITCH NOTES 1 OCTAVE

1. Chromatic keyboard view. Double Press **(PITCH)** to lock the keyboard view on the value buttons.

2. Transpose existing notes up an octave. With notes added in an octave range, Hold **[CTRL]** + **[VB8]** to transpose the existing notes up 1 octave. Repeat to transpose further.

3. Transpose existing notes down an octave. With notes added in an octave range, Hold **[CTRL]** + **[VB16]** to transpose the existing notes down 1 octave. Repeat to transpose further.

4. When using this transpose method, the keyboard view will switch to the octave range selected along with the transposed notes.

▍TRANSPOSING PITCH NOTES

1. It is not essential, but recommended as a good practice to view the keyboard or play the track while adjusting pitch. Double Press **(PITCH)** to lock the keyboard view on the value buttons.

2. Transpose notes. Turn **(PITCH)** Clockwise to move notes up in the scale. Each knob 'click' will move by one note step in the current scale.

3. Transpose notes. Turn **(PITCH)** Counter clockwise to move notes down in the scale. Each knob 'click' will move by one note step within the current scale.

5 Melodic Structures

Harmony

The Harmony algorithm transposes notes to create new interesting chord inversions with the selected scale. Notes are adjusted by 1 tone at each iterative rotation 'click' of the harmony parameter knob. This is a secondary function and accessed using [CTRL]. Notes in a chord are individually transposed at each iteration. Notes are selected based on the harmony algorithm transposing up and transposing down.

Examples.

Chord, D Major, Chromatic Scale, C Root. Pitch view chromatic keyboard.

Example: To adjust the harmony, Hold [CTRL] + Turn (HARMONY). Turning clockwise will cyclically move each note individually. Notes are selected by the algorithm within the current scale.
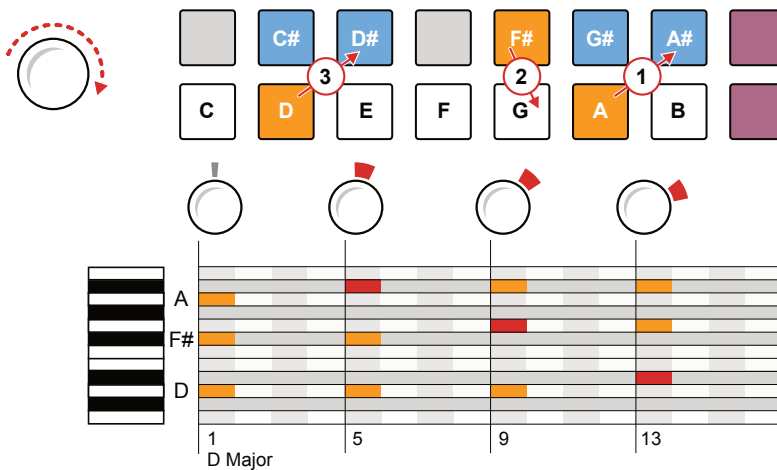
Example: To adjust the harmony, Hold [CTRL] + Turn (HARMONY). Turning the knob counter-clockwise will cyclically move each note individually. Notes are selected by the algorithm within the current scale.
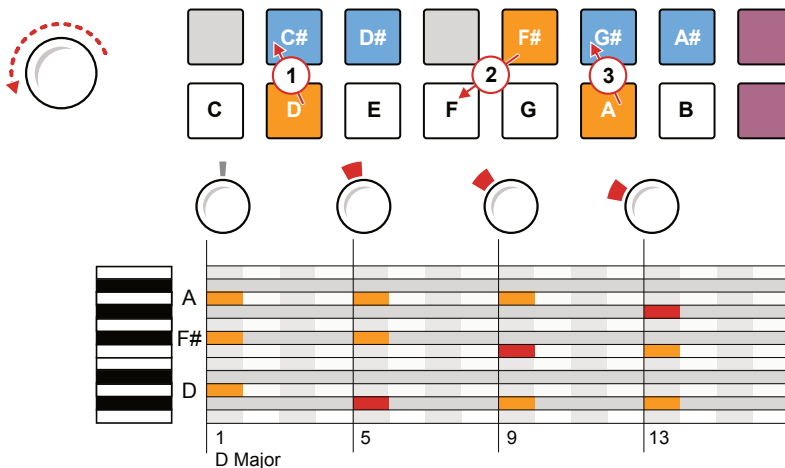
NOTES

▌ CREATING CHORD VARIATIONS WITH THE HARMONY ALGORITHM

1. Chromatic keyboard view. Double Press **(PITCH)** to lock the keyboard view on the value buttons.

2. Ensure a chord is created by selecting notes in the scale.

3. Generate a chord variation. Hold **[CTRL]** + Turn **(HARMONY)** to transpose the existing notes.

   • Each 'click' iteration of the knob will move an individual notes by one chord tone value in the selected scale.

   • Individual notes are adjusted in an ordered manner based on the harmony algorithm.

   • Chords are generated using only notes in the selected scale.

   • Try turning clockwise and counter clockwise to generate new interesting chord variation.

5 Melodic Structures

5.4 Scale & Root.

Scale

Melodic functions such as pitch and harmony operate within a defined scale. T-1 has 8 available scales, including a user defined scale. To select from the options use the (**SCALE**) knob. The option to select a root note is available as a secondary option accessed with the [**CTRL**] button.

Scale View Mode.

The scale view visualises the available scale options. To access, Hold (SCALE) or Double Press (SCALE) to lock the display.

Chro	Maj	Min	Pent	Hira	Iwat	Tetra	User

WHITE — Selected Scale
BLUE — Available Scales
PINK — User Scale
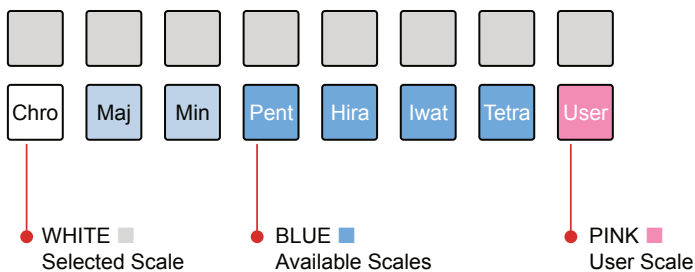
VB	Scale	Default 'C' Notes	Description
9	Chromatic	C, C#, D, D#, E, F, F#, G, G#, A, A#, B	Classic western scale using all 12 notes / tones, with intervals of a semi-tone.
10	Major	C, D, E, F, G, A, B	Common western diatonic scale using 7 notes / tones. White keys, no sharps or flats.
11	Minor	C, D, D#, F, G, G#, A#	Common western diatonic scale using 7 notes / tones.
12	Pentatonic	C, D#, F, G, A#	International scale using 5 notes / tones.
13	Hirajoshi	C, D, D#, G, G#,	Japanese 5 note scale derived from shamisen 3-stringed musical traditions. Classic Japanese sound.
14	Iwato	C, C#, F, F#, A#,	Japanese 5 note scale from koto instrument traditions and . derived from Hirajoshi mode.
15	Tetratonic	C, E, G, B	Historic, less common 4 note scale. More often found in Native American, Maori and Inuit cultures.
16	User Scale	C, C#, D, D#, E, F, F#, G, G#, A, A#, B	Custom designed by the user.

SELECTING A SCALE

1. Optionally view the scale menu view. Double Press (SCALE) to lock the scale view on the value buttons. Actual notes shown in (PITCH) view.

2. Select a scale. Press [VBx], where 'x' is a value button 9-16 representing a scale. Example: Major scale, press [VB10].

3. Change a scale. Turn (SCALE) to change the scale. The scale page will display the current scale. Hold & Turn (SCALE) to view the scale view on the value buttons while changing.

Scale examples: Shown in Pitch View.   ⬤ Root Note C

Chromatic [VB9]
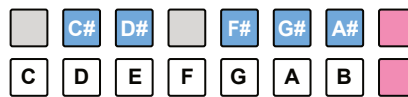
Major [VB10]
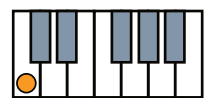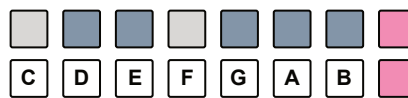
Minor [VB11]
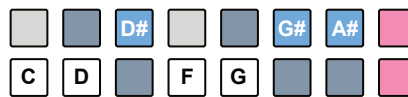
Pentatonic [VB12]
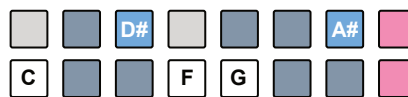
Hirajoshi [VB13]

Iwato [VB14]

Tetratonic [VB15]
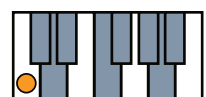
User [VB16]
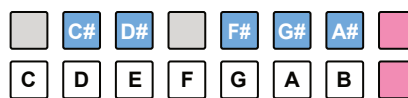
5 Melodic Structures

▌ CREATING A USER SCALE FOR THE TRACK

1. Ensure that 'C' is selected as the root note. This will be the reference when transposing the root.

2. Select User Scale. Hold **(SCALE)** + Hold **[VB16]**. Keep the knob and button held throughout the process.

3. The user scale note options will be displayed on the value buttons. Initially all note will be available. Black keys are represented by the BLUE ■. Buttons and White keys by WHITE ■ Buttons.

4. Select notes for the scale. Press **[VBx]**, where 'x' is a value button representing a note to remove from the scale.

5. Notes not selected in the scale are shown as BLUE GREY ■.

6. When the scale has been created release the **(SCALE)** + **[VB16]** controls. The scale will now be active in the user scale option for the selected track. Other tracks also have the option for a user scale.

BLUE ■
Notes in the Scale

User Scale		C#	D#			G#	A#	
[VB16]	C	D	E	F	G		B	

WHITE ■
Notes in the Scale

BLUE GREY ■
Deselected Notes
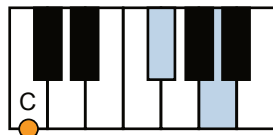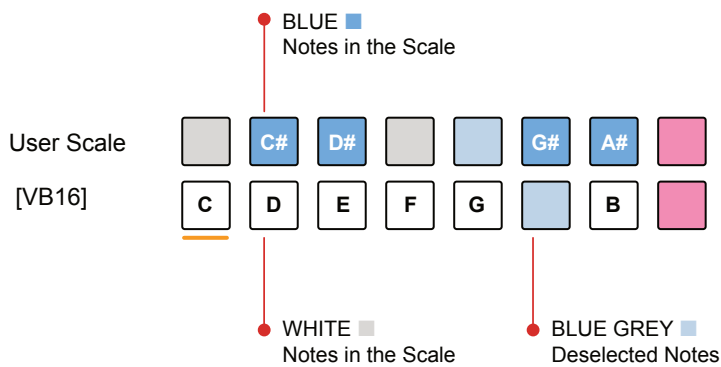
Ensure Root note is 'C' when building user scales

Root

A root note establishes the pitch tonality of a chord or scale and is the lowest / first note in the group. Chords are typically named after the root, for example C Major has a C root note, G Major has a G root note. The root note therefore defines the key of a chord and is the note on which a scale is built. The root note for a scale can be changed in T-1. This changes only the scale root and does not transpose any existing chords or notes.

BLUE ■
Available Notes

| | C# | D# | | F# | G# | A# | |
| C | D | E | F | G | A | B | |

PINK ■
Active Root Note

WHITE ■
Available Notes

C
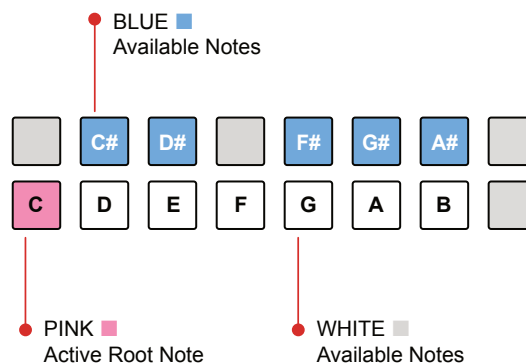
SELECTING A ROOT NOTE

1. View the root note page. Hold **[CTRL]** + Press **(ROOT)** to view the value button chromatic display.

2. Set the root with the root knob. Hold **[CTRL]** + Turn **(ROOT)**.

3. Set root note with value buttons. While the root page is displayed, Press **[VBx]** where 'x' is the value button representing a note on the chromatic keyboard.

4. The currently selected root note is shown by the PINK ■ lit value button.

6

Progressions

The main building blocks of creating tracks and patterns have been covered. Rhythmic elements combined with the melodic foundations allow the foundation of a song structure to be developed. Progressions are the evolution and changes applied in a complete song to develop interest, engage the listener and build the musical story. This is usually formed with a series of sections that when combined create a full arrangement. Technically speaking, progressions are a series of chords that operate around a key. In the context of T-1, progressions allow the development of patterns with variations that take the listener on the musical journey maintaining interest, maybe surprise and evolve as the song develops. This section helps to move on towards a complete song production with variations that can contribute to these sections of the song arrangement. T-1 is well equipped with the tools to apply and develop progressions. Tonal shaping and the voicing and style elements contribute along with range and phrase. The generative power of T-1 can be explored with the cadence and LFO functions introduced into the production. Even CV input, accessed from the CV Mod connection, can be used as a modulation source to contribute to the variation of groove and phrase patterns. The expansion of a song is possible not only in duration but in musical phrasing and interesting, sometimes creating unpredictable melodic parts. Exploring avenues of interest and trying things may lead to many happy accidents and also allow exploration of a less familiar production process. The ability to control and steer the direction is of course in the hands of the musician and producer and with the melodic tools to develop more elaborate and unique progressions, the application should focusses on creativity rather than process.

6 Progressions

6.1 Tonal Shaping.

The basic foundations for melodic structures are set with the scale, root, and pitch parameters. The Harmony function delivers chord progressions by changing notes. There are more options for tonal shaping and creating melodic variations and melodies. The tonal shaping parameters include Voicing and Range. Style and Phrase also provide control over the melodic behaviour. These parameters are found in the shape section.
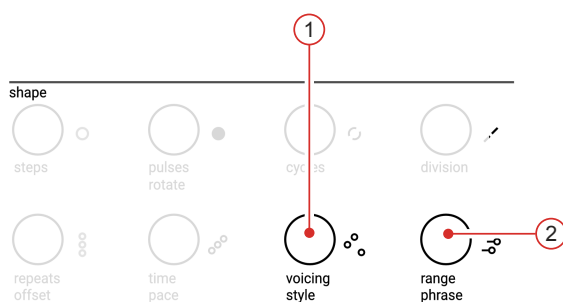
	Parameter	Turn	Push	Ctrl + Turn
1	voicing style	Voicing changes the chord note order across octaves.	Shows the voicing setting.	Selects one of 6 voicing style templates
2	range phrase	Controls the up and down note behaviour	Range option view. Shows current range.	Selects one of the 8 cadence or LFO shapes

6.2 Voicing & Style Overview

Voicing adjusts the order of notes across octaves. This starts from the placement of pitch note settings. The behaviour of how these notes are transformed is governed by the selected Style option. Essentially, Voicing controls the amount of note adjustment up and down the octaves, the behaviour of which is determined by the selected Style shape.

Output

Voicing
Transformation amount - Bi-Polar

(1) ---- Transform

Poly Fixed | Poly Ramp | Poly Climb
Mono Fixed | Mono Ramp | Mono Climb

Style
3 Styles - Poly or Mono

| | C# | D# | | F# | G# | A# | |
| C | D | E | F | G | A | B | |

Pitch
Pitch Note Menu Settings
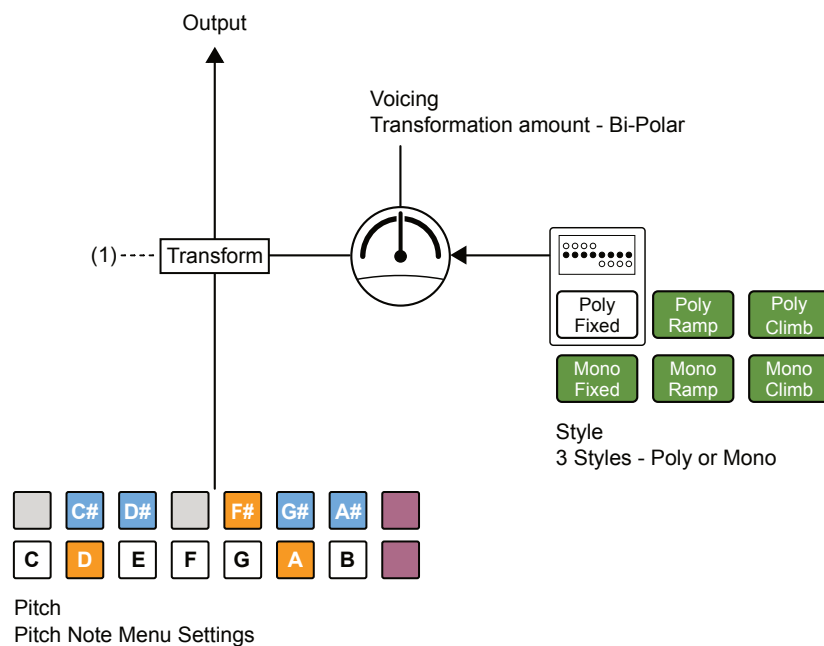
Voicing is a bi-polar parameter meaning that the amount can transform notes up or down the octave range. The note play direction can be changed in the voicing options.

One of the Styles is always selected. The default is Poly - Fixed, represented by [VB1] on the value buttons. However, the style is not immediately applied as the Voicing, i.e. the amount is set by default to 0. The pitch notes would therefore be passed as is through to the output unless Voicing is applied.

(1) All T-1 Parameters have close interaction and rely on each other to generate the final output. Transformation is not generated in isolation from one single parameter but is a combination of settings from many parameters.

6 Progressions

6.3 Style.

Style creates inversions of the pitch chord based on the pitch menu setting. This is based on 3 template styles each which operates polyphonically or monophonically. Polyphonic mode will play multiple notes together while monophonic plays only one note at a time on each pulse trigger. Monophonic options apply arpeggio style note movement. The style parameter enables the selection of one of the 6 available options.

Style View Mode.

● WHITE ☐
Selected Style

| Poly Fixed | Poly Ramp | Poly Climb | | | | | Style View
Hold [CTRL] + (STYLE). |
| Mono Fixed | Mono Ramp | Mono Climb | | | | |

● DARK GREEN ■
Style Options
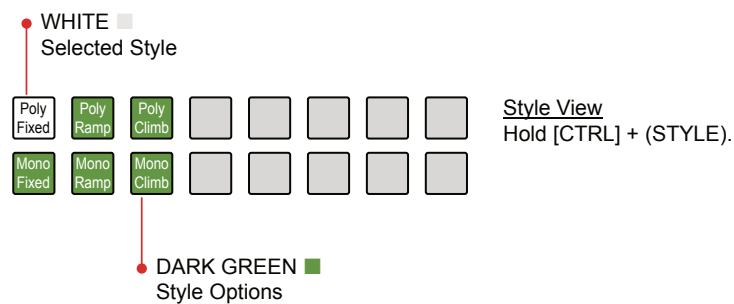
▌ APPLYING A STYLE

1. Select the pattern and track.

2. Ensure notes / chords are set in the **(PITCH)** menu.

3. To view the current style setting, Hold **[CTRL]** + Press **(STYLE)**. Default is Polyphonic Fixed indicated by the WHITE ☐ [VB1] value button. Other options are shown lit DARK GREEN ■.

4. To select the style template;

   • While displaying the style page, Press **[VB1]** - **[VB3]** to select a preset polyphonic style template or **[VB9]** - **[VB11]** for the monophonic options. Quick and most visual method.

   • Hold **[CTRL]** + Turn **(STYLE)**. This changes the template on each rotary 'click' across the 6 options.

   • Hold **[CTRL]** + Press & Turn **(STYLE)**. This changes the template on each rotary 'click'. Fast method also visualises the settings.

5. The amount of variation and the direction of notes is set in the Voicing parameter options.

Style Options

Style is the model which creates inversions of the pitch menu chord. 3 Style options are available, each of which is available for polyphonic notes or monophonic note changes. Illustrations are examples only and show 3 pulses of the original chord in ORANGE ◾ and inversions GREY ◼.

Fixed Polyphonic
Value Button [VB1]

Monophonic
Value Button [VB9]

:C

Voicing Down -3   Voicing Up +3   Voicing Down -3   Voicing Up +3
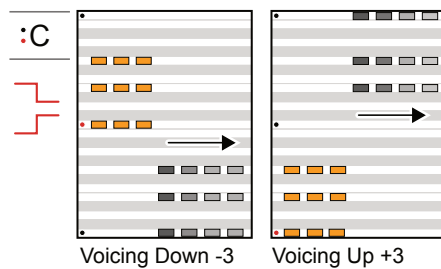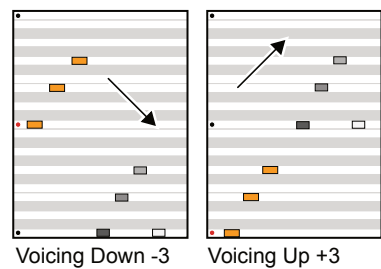
Creates static inversions, moving the chord notes up, voicing clockwise / value buttons right or down when turning counter-clockwise / value buttons left.

Ramp Polyphonic
Value Button [VB2]

Monophonic
Value Button [VB10]

:C

Voicing Down -3   Voicing Up +3   Voicing Down -3   Voicing Up +3
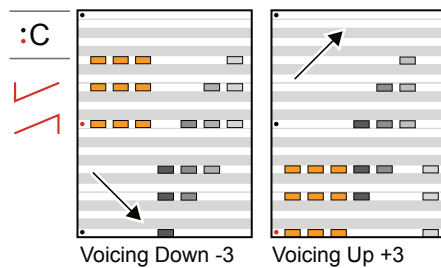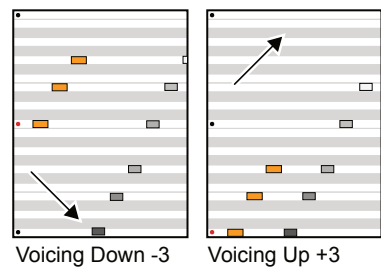
Adds notes up/down similar to classic arpeggiators. Notes up, turn voicing clockwise / value buttons right or down with voicing counter-clockwise / value buttons left.

Climb Polyphonic
Value Button [VB3]

Monophonic
Value Button [VB11]

:C

Voicing Down -3   Voicing Up +3   Voicing Down -3   Voicing Up +3
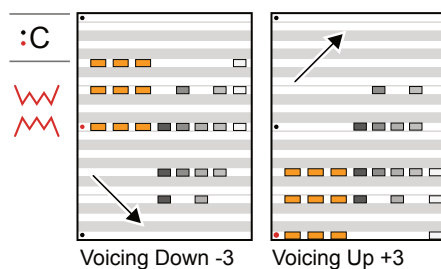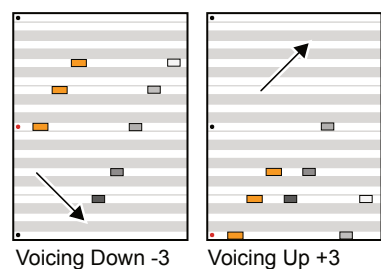
Creates inversions by statically moving the full chord notes up, voicing clockwise / value buttons right or down when turning counter-clockwise / value buttons left.

6 Progressions

6.4 Voicing.

Voicing sets the amount of transformation applied by the chosen style. Also the up or down direction of note playback can be changed in the voicing options. Notes must be added, typically as a chord in the pitch menu.

Voicing View Mode.
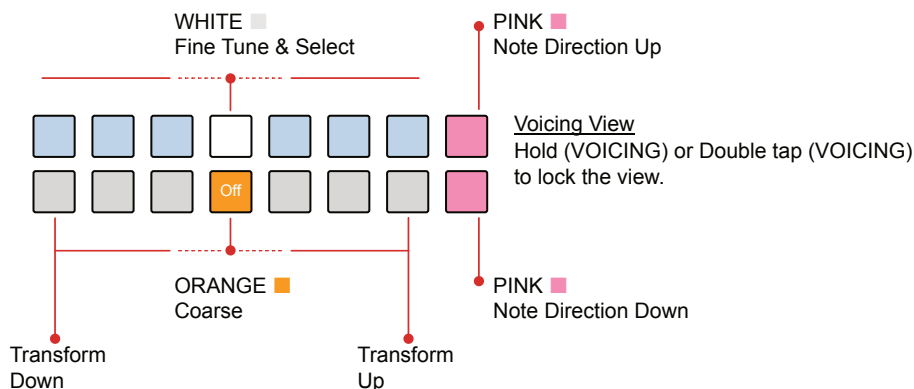
ADJUSTING THE VOICING

1. Select the pattern and track.

2. Ensure notes / chords are set in the **(PITCH)** menu and a desired style is selected. The default is 'Poly Fixed'.

3. To view the current style setting, Hold **(VOICING)**. Default is set to off. The WHITE ⬜ value button indicated the selected amount. The lower value buttons adjust the amount - coarse resolution. These will be lit ORANGE 🟧. Buttons **[VB4]** & **[VB12]** by default set to the 'off' state.

4. To select the amount of transformation;

    • While displaying the style page, Press **[VB9]** - **[VB11]** to adjust the transformation amount down in larger steps. Press **[VB13]** - **[VB15]** to adjust the transformation amount up in larger steps. Press **[VB1]** - **[VB8]** to fine tune the amount. Quick and most visual method.

    • Turn **(VOICING)**. This changes the amount on each rotary 'click' of the knob.

    • Press & Turn **(VOICING)**. This changes the amount on each rotary 'click' of the knob. Fast method also visualises the settings.

Play Direction

The style will determine the behaviour of the notes, however the direction is set in voicing. Notes can play, similar to an arpeggio, up or down in a sequence. Each note is played in turn on each pulse trigger.

UP - Direction of Playback   DOWN - Direction of Playback
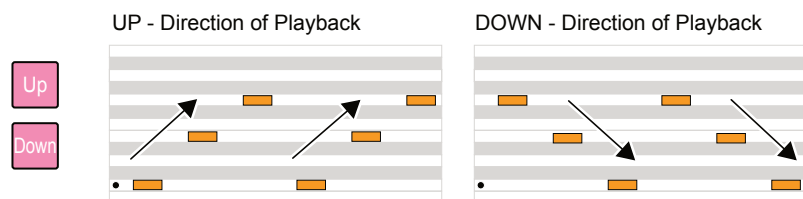
| CHANGING THE PLAYBACK DIRECTION

1. Select the pattern and track.

2. To view the current style setting, Hold (VOICING). The value buttons [VB8] and [VB16] represent the Up/Down selection,

3. Press the top button [VB8] to select UP. Both buttons are lit but the active mode button will be brightly lit PINK ■. The other button is lit but slightly dimmed.

4. Press the bottom button [VB16] to select DOWN. Both buttons are lit but the active mode button will be brightly lit PINK ■. The other button is lit but slightly dimmed.

5. The notes and arpeggio's will play in the direction selected. This is useful also for live sessions and ad-libs..

6 Progressions

6.5 Range & Phrase Overview.

Range and Phrase are another parameter pair that work closely together to create melodic phrases with the source of notes coming from the pattern and the track pitch note menu placements. A Phrase is a predefined shape for generating melodic passages. Range expands the amount of pitch variation within the current scale for the selected Range and also controls the phrase rate. Essentially, a Phrase will act as a melody generator and the note range is controlled by the Range parameter.

Output

Range

Rate   Pitch Range

(1) ---- Transform   /2 = x2

Cadence 1   Cadence 2   Cadence 3   Cadence 4

Saw   Triangle   Sine   Pulse

Phrase
8 Phrase Templates

C# D#   F# G# A#

C D E F G A B

Pitch
Pitch Note Menu Settings
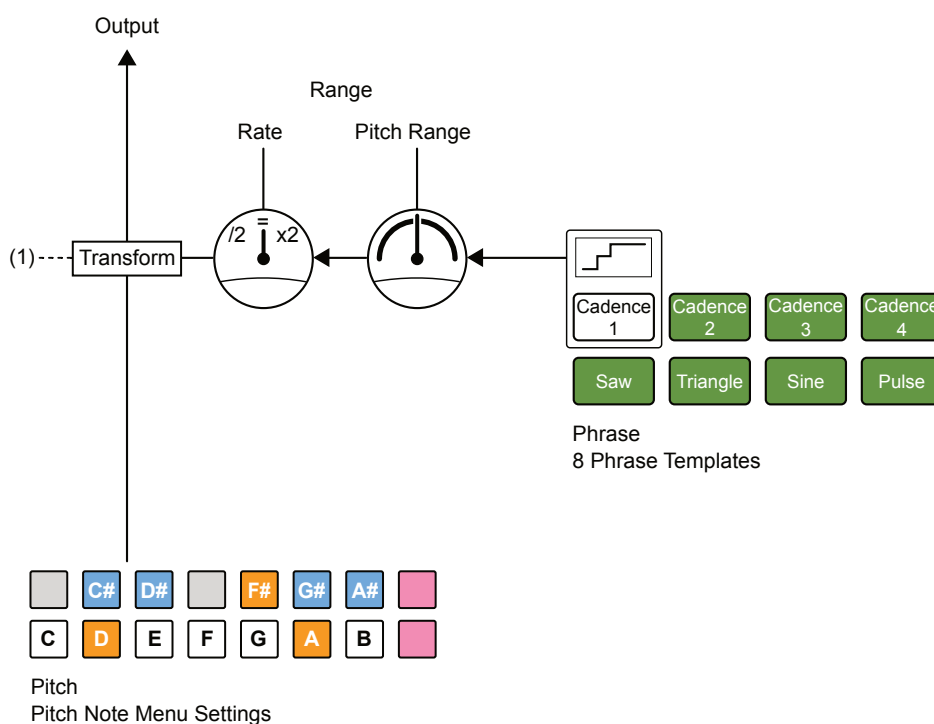
The behaviour of how these notes are played out is governed by which of the 8 Phrase options is active and how much range and rate is applied. In reality there is a 9th Phrase option which uses and external CV input - CV Mod to generate the melodic phrase. This is covered elsewhere.

(1) All T-1 Parameters have a symbiotic relationship, meaning what is set on one can affect another and vice versa. For example the melodic output when setting a phrase and range will also be affected by the style and voicing. Bear in mind that changing one of multiple parameters will ultimately affect the output pattern.

6.6 Phrase

Think of the Phrase function as a melodic engine, a tool that generates phrases ideal for chord progressions and tonal patterns based on the pitch menu notes, scale and the range and rate controlled by Range. Phrase actually utilises one of the 8 selectable shape templates. This then determines the melodic passage.

Phrase View Mode.

WHITE ⬜
Selected Phrase

DARK GREEN 🟩
Phrase Cadences

Cad 1	Cad 2	Cad 3	Cad 4				
Saw	Tri	Sine	Pulse				CV

Phrase View
Hold [CTRL] + (PHRASE).

DARK GREEN 🟩
Phrase LFO's

PINK 🟪
CV Input
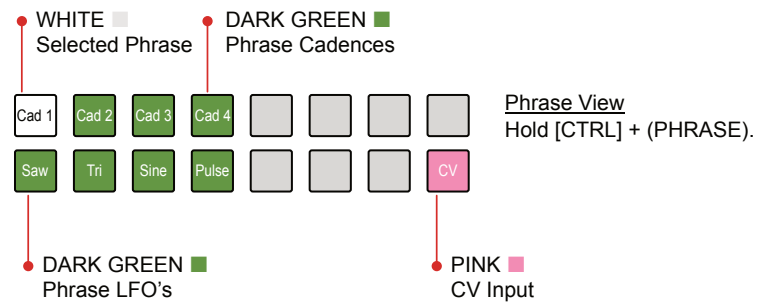
▌ APPLYING A PHRASE

1. Select the pattern and track.

2. Ensure notes / chords are set in the **(PITCH)** menu.

3. To view the current phrase setting, Hold **[CTRL]** + Press **(PHRASE)**. Default is Cadence 1 indicated by the WHITE ⬜ **[VB1]** value button. Other options are shown lit DARK GREEN 🟩.

4. To select the phrase template;

   • While displaying the phrase page, Press **[VB1]** - **[VB4]** to select a preset cadence template or **[VB9]** - **[VB12]** for the LFO shape options. Quick and most visual method.

   • Hold **[CTRL]** + Turn **(PHRASE)**. This changes the template on each rotary 'click' across the 8 options.

   • Hold **[CTRL]** + Press & Turn **(PHRASE)**. This changes the template on each rotary 'click'. Fast method also visualises the settings.

5. The amount of note range and the modulation rate is set in the Range parameter options.

6 Progressions

Cadence Overview

The first 4 Phrase options are available on the top row of the DARK GREEN ■ value buttons represent cadences. A cadence is a rhythmic or pitch based sequence of notes or chords formed into a passage of music.

Cadence
Value Button [VB1] - [VB4]

The cadence direction and range is set by the Range parameter. This is a bi-polar setting and can control the direction of the cadence even though the general shape is maintained. The shape is determined by the Phrase option. The notes as selected in the (PITCH) menu will play as chords or arpeggio style notes based on the (STYLE) setting. The examples here assume chords set polyphonically for the style.

Chord progression example

In this example, Cadence 1 controls the chord changes 1,2 & 3 in line with the cadence shape. This is illustrated at the normal x1 rate across the 4 bars.

The amount that the chords are transformed and offset from the original position is based on the Range. In this and following examples the range is set to one orange step right - range up.

Range

NOTES

Cadence 1   Cadence
             Value Button [VB1]

:C

Bi-polar, Inversion
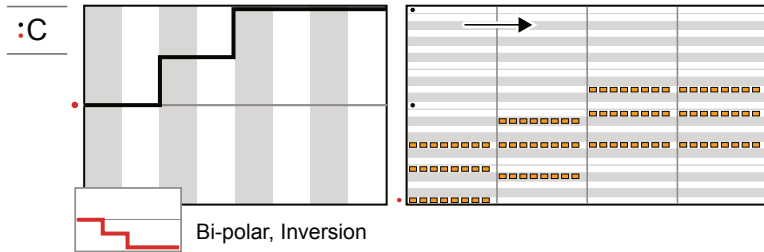
Cadence 2   Cadence
             Value Button [VB2]

:C

Bi-polar, Inversion
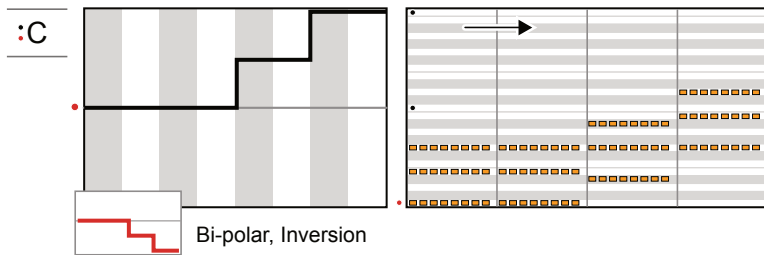
Cadence 3   Cadence
             Value Button [VB3]

:C

Bi-polar, Inversion
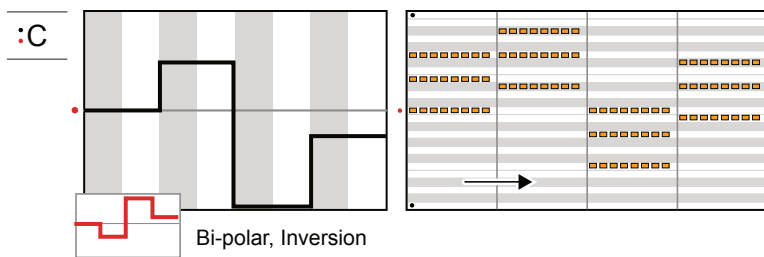
Cadence 4   Cadence
             Value Button [VB4]

:C

Bi-polar, Inversion
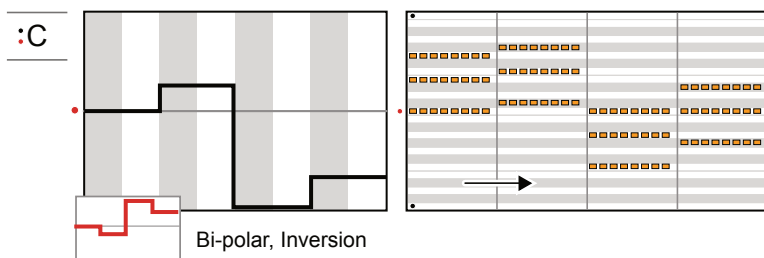
6 Progressions

LFO Overview

The second set of 4 phrase options are available on the bottom row of the DARK GREEN ■ value buttons. These represent LFO's. An LFO is a Low Frequency Oscillator which cycles modulation of notes repetitively.

LFO
Value Button [VB9] - [VB12]

The cadence direction and range is set by the Range parameter. This is a bi-polar setting and can control the direction of the cadence even though the general shape is maintained. The shape is determined by the Phrase option. The notes as selected in the (PITCH) menu will play as chords or arpeggio style notes based on the (STYLE) setting. The examples here assume chords set polyphonically for the style.

Chord progression example

In this example, Cadence 1 controls the chord changes 1,2 & 3 in line with the cadence shape. This is illustrated at the normal x1 rate across the 4 bars.

The amount that the chords are transformed and offset from the original position is based on the Range. In this and following examples the range is set to one orange step right - range up.

Range

NOTES

Saw   LFO
Value Button [VB9]

:C

Bi-polar, Inversion
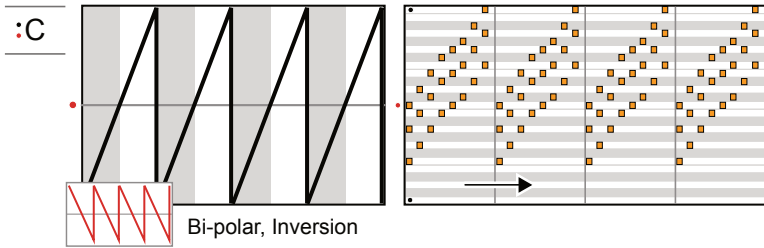
Triangle   LFO
Value Button [VB10]

:C

Bi-polar, Inversion
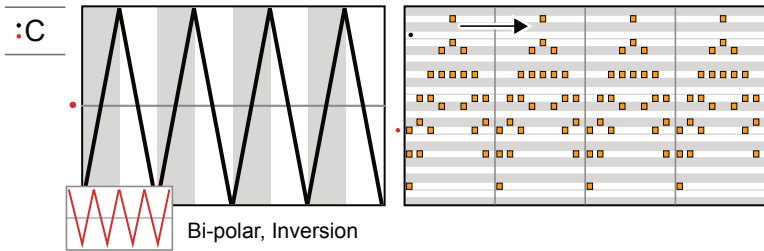
Sine   LFO
Value Button [VB11]

:C

Bi-polar, Inversion
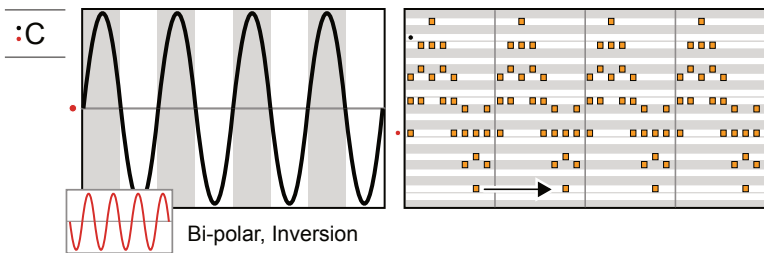
Pulse   LFO
Value Button [VB12]

:C

Bi-polar, Inversion
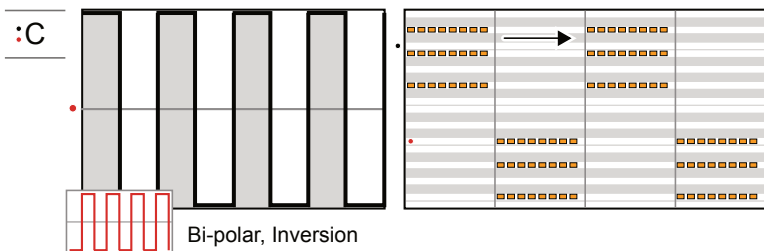
6 Progressions

6.7 Range

Range controls the amount of note variation when generating a phrase. This sets how wide the octave range for the spread of notes and chords. The range is a bi-polar setting. In addition, the phrase rate can be set to one of 3 values to speed up or slow down the phrase generated.

Range View Mode.

WHITE
Fine Tune & Select

PINK
Rate x2

Range View
Hold (RANGE). Double tap (RANGE) to lock the view.

ORANGE
Coarse Values

PINK
Rate /2

Decrease

Increase

Range

C Major
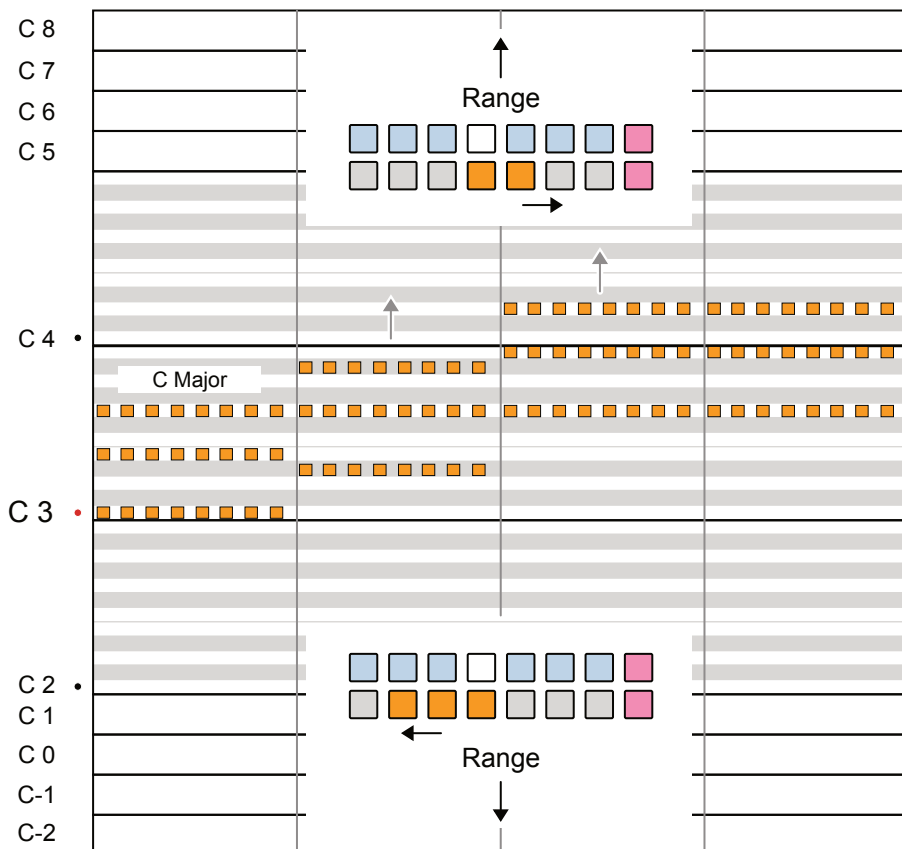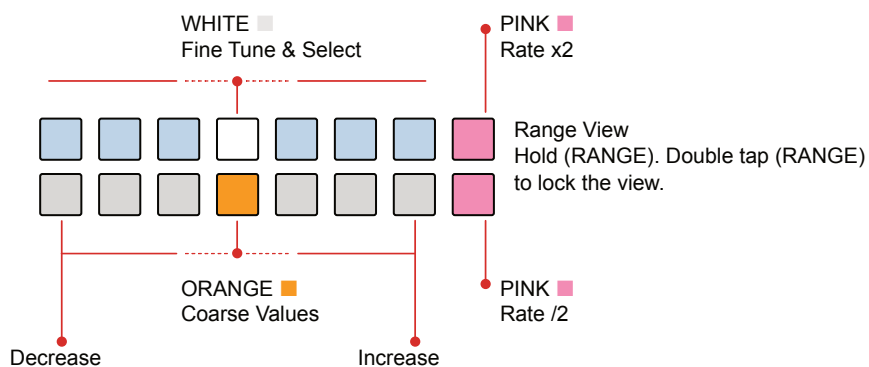
Range

Phrase Rate

The speed of the phrase playback can be changed within the (RANGE) menu using the upper [VB8] button which doubles the speed while the lower [VB16] button halves the speed. Normal, x1 default playback is reset with both buttons illuminated PINK ■ value buttons.

Press [VB8] - Increased Rate x2

Default Normal Rate x1
Both buttons PINK ■

Press [VB16] - Lower Rate /2
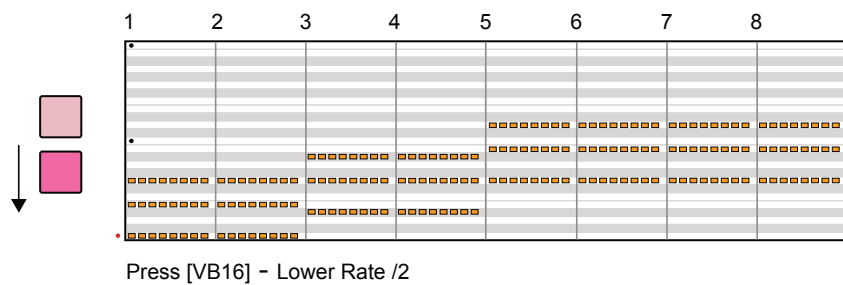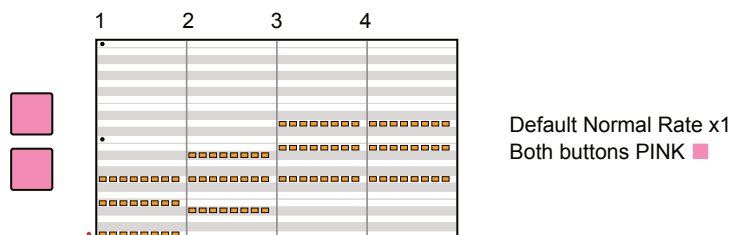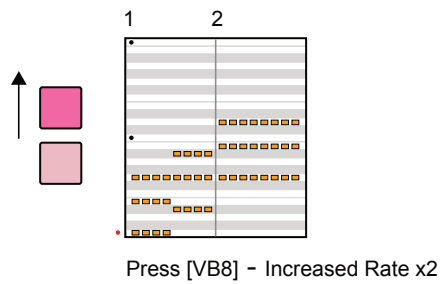
Division operates as a macro that also affects Rate and Time.

6 Progressions
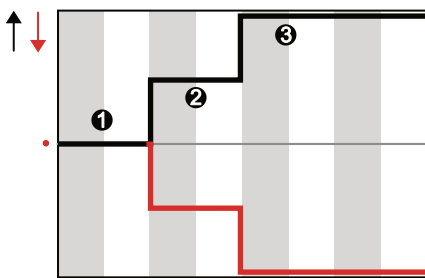
NOTES

▌ APPLYING A RANGE

1. Select the pattern and track. Also ensure a phrase is selected.

2. Ensure notes / chords are set in the **(PITCH)** menu.

3. To view the current phrase setting, Hold **(RANGE)**. To lock the view Double tap **(RANGE)**. **[VB4]** & **[VB12]** are default.

4. To adjust the note range that follows the selected phrase;

    •   While displaying the phrase page, Press **[VB9]** - **[VB11]** increase the phrase range down or **[VB13]** - **[VB15]** to increase phrase range up. **[VB9]** and **[VB15]** are the widest extremes. Fine tune with [VB1] - **[VB7]**. Default state is **[VB12]** & **[VB4]** - no note deviations applied.

    •   Hold **[CTRL]** + Turn **(RANGE)**. This changes the value incrementally on each rotary 'click'.

    •   Hold **[CTRL]** + Press & Turn **(RANGE)**. This changes the value incrementally on each rotary 'click'. Fast method also visualises the settings.

▌ CHANGING PHRASE RATE

1. Select the pattern and track. Also ensure a phrase and a range is selected.

2. Ensure notes / chords are set in the **(PITCH)** menu.

3. To view the current phrase setting, Hold **(RANGE)**. To lock the view Double tap **(RANGE)**. **[VB4]** & **[VB12]** are default.

4. To change the rate for phrase;

    •   The default state should be a normal x1 rate, playing over 4 bars. The value buttons lit PINK ▪.

    •   To increase the rate to x2, complete pattern spanning over 2 bars, Press **[VB8]**. The value buttons will illuminate brighter pink / purple.

    •   To decrease the rate to /2, complete pattern spanning over 8 bars, Press **[VB16]**. The value buttons will illuminate brighter pink / purple.

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6.8 Performance Buttons

T-1 is designed to encourage and support organic and new ways of production. This is especially relevant with live performances and improvisations. The Mute and Temp performance buttons help create on-the-fly live variations and progressions across tracks.

temp   mute
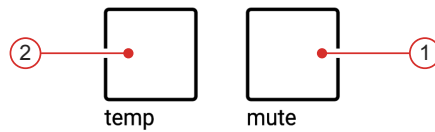
Double tap [TEMP] or [MUTE] to lock and keep
the function selection active.

6 Progressions

1. Mute Button

The mute button can 'silence' one or more tracks in the pattern. Muting and unmuting tracks creates variations and helps create a live progression. CC and FX tracks are illuminated CYAN ■ and MAGENTA ■ unless muted.

▌ PERFORMANCE MUTING OF TRACKS

1. Select the home track view by pressing [BANK].

2. Hold [MUTE] + Press [VBx], where 'x' is one the value buttons representing a track to mute / unmute. Multiple tracks can be selected. It is possible to lock the mute selection by double pressing [MUTE].

3. The [MUTE] button will flash.

4. Release [MUTE] to make the mute or unmute action active for the selected tracks.

5. Muted tracks are lit BLUE GREY ■.

▌ INSTANT MUTING OF TRACKS

1. Select the home track view by pressing [BANK].

2. Hold [CTRL] + [MUTE] + Press [VBx], where 'x' is one the value buttons representing a track to mute / unmute. Multiple tracks can be selected.

3. The mute or unmute action is immediately active for the selected tracks.

4. Muted tracks are lit BLUE GREY ■.

2. Temp Button

The temp button allows temporary parameter changes for note and CC tracks. Releasing the button restores any parameter changes made to the original state. Temp can also control temporary mutes, reset to original state when temp is released. Temp would need to be continuously held or locked to change and save parameters.

TEMPORARY CHANGING TRACK PARAMETERS

1. Select the home track view by pressing **[BANK]**.

2. Select one or more tracks. Press **[VBx]** where 'x' is the track.

3. Hold **[TEMP]** + Turn **(Knob)**, for the parameters to adjust. The parameter will change. It is possible to lock the temp selection by double pressing **[TEMP]**.

4. Hold **[TEMP]** + **[PATTERN]** + Turn **(Knob)** to change relative parameter elements across all tracks in the pattern.

5. The **[TEMP]** button will flash.

6. Release **[TEMP]** to restore the parameter values to the original state.

SAVING TEMPORARY PARAMETER CHANGES TO A PATTERN

1. Select the home track view by pressing **[BANK]**.

2. Hold **[TEMP]** + **[PATTERN]** + **[VBx]** to save the temporary changes to pattern 'x'.

   • If 'x' is the current pattern will override the saved changes.

   • If 'x' is a new pattern, the state is saved and new pattern will play.

7

Cycles & Random

Cycles and random are two functions that operate globally, with multiple T-1 elements. Cycles is the name given to a feature that groups combinations of parameter settings that are applied on each loop of the track sequence. This allows each Euclidean cycle to have a unique set of parameter values applied when each cycle of the sequence is active. All parameters can be automated within a cycle and can easily be cleared. Edit mode is required to assign a parameter change within a specific cycle. Generic changes to parameters across all cycles is possible outside of edit mode. There are 16 cycles available with 4 assigned to each track by default. The starting point of a project will find all 4 cycles to be identical. Think of a cycle as a parameter automation lane, running in parallel and overlaid to the primary pulse pattern. A cycle does not itself affect any parameter settings but more so acts as a container for an alternate set of parameter values for the track. Random is a feature that modulates and changes the behaviour of various parameters over a 16 step modulation sequence. Random is applied to the primary parameters in T-1, each operates it's own sequence. Primary parameters are immediately available functions labelled white on the top panel. The global randomisation and application per parameter is complex and consists of many moving parts. Random is designed with creativity and unpredictability in mind, while respecting the musical context. Try not to worry too much about absolute values and settings but instead tweak and experiment to produce in a more organic way. Trust in Random generated outcomes and expect the unexpected. Cycles and Random are useful features that can contribute to the variation of a passage or the arrangement of a full song. Either way they can be used to add even more interest in live performances.

7 Cycles & Random

7.1 Cycles Overview

The Cycles control is found in the shape section of T-1. When playing the sequence the selected number of cycles will play in sequence. The default is 4 active cycles. Each cycle iteration is aligned to the pattern cycle length. Each cycle, unless edited, will be identical to each other at the outset.

The track will play each cycle in turn then restart and loop playback. Parameters can be adjusted as a deviation from the original settings within each cycle. This creates alternate versions which play in sequence building interesting and progressive arrangements.

WHITE
Current Cycle

OFF
Available, Inactive Cycles

Cycle View
Hold or Double Tap (CYCLES) to
lock the cycle view buttons.

BLUE GREY
Available, Active Cycles

RED
Edited Cycles

▌ VISUALISING CYCLES

1. Select the pattern and track.

2. To view the cycle page, Hold **(CYCLES)**.

3. To lock the cycles page view, double tap **(CYCLES)**.

7.2 Editing Cycles

Cycles can be selected for editing. Parameter values within the cycle are the elements that can be edited and are then 'locked' into the cycle. Each time the cycle plays, the defined parameter values will be applied. Cycles being edited will loop. Any deviations from the original parameters are what creates unique musical passages and sections.

cycles

Cycles Edit Mode
Signified by the [BANK] button illuminated in RED ■
and the selected cycle value button to edit will flash.

save

bank
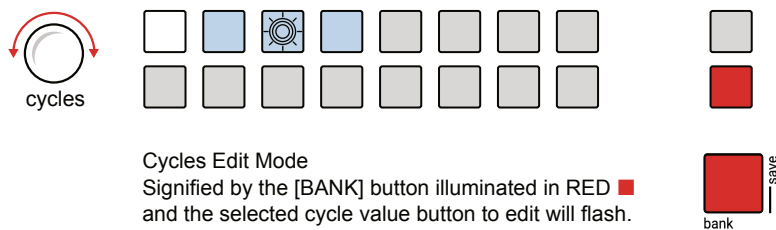
▌ EDITING CYCLES IN EDIT MODE

1. Select the pattern and track.

2. To view the cycle page, Hold or double tap (CYCLES).

3. If the sequence is stopped the active cycles will be lit BLUE GREY ■.
    If the sequence is playing the currently playing cycle is lit WHITE ■.

4. In cycle view Press [VBx] for the value button that represents the cycle to edit. By default the first 4 cycles out of 16 are active. This selects the cycle edit mode. Multiple cycles can be edited when selected simultaneously. Turn (CYCLES) to also select a cycle to edit.

5. Edit mode is indicated by a RED ■, flashing [BANK] button. The selected cycle will flash and play in loop. If multiple cycles are selected they will play in a chained loop.

6. Change one or more parameters. For example; Turn (PITCH) and Turn (REPEATS). The parameter values adjusted will be locked and saved into the cycle. This is specific to edit mode.

7. The edited cycle value button will be lit, or if selected flash RED ■ to signify that the parameter edits have been made.

8. Playing the pattern will now play cycles and their progressions.

9. To exit Cycles Edit Mode, Press [BANK]. If playing, any cycles being edited and therefore on loop will return to the normal playback mode.

10. To switch from cycle view to track view while keeping cycle edit mode active, Hold [CTRL] + [BANK].

7 Cycles & Random

7.3 Number of Cycles

Cycles will play in order. Each parameter set will play its edited values. This helps to create arrangements and progressions. The default starting point is 4 cycles, but up to 16 per track are selectable and a minimum of one cycle is possible.

Example: Cycles Progression.

Cycle 1	Cycle 2	Cycle 3	Cycle 4
Original Parameters	Original Parameters	Parameter Set 2	Parameter Set 2
Part 1		First Change Up	
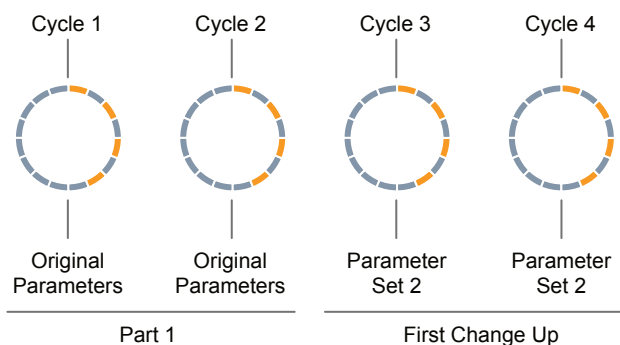
▌ CHANGING NUMBER OF ACTIVE CYCLES

1. Select the pattern and track.

2. To view the cycle page, Hold or double tap **(CYCLES)**.

3. Number of cycles can be changed in or out of edit mode.

4. To set the number of active cycles, Hold **[CTRL]** + **(CYCLES)** + **[VBx]** where 'x' refers to the number of cycles to select.

5. To increase the number of active cycles, Hold **[CTRL]** + Turn **(CYCLES)** Clockwise. The additional cycles, up to 16, will illuminate.

6. To reduce the number of active cycles, Hold **[CTRL]** + Turn **(CYCLES)** Counter-clockwise. One cycle is the minimum.

7. Changing the number of cycles, deactivates or activates cycles, meaning any edits still exist even when a cycle is set inactive ie when decreasing cycles. This can be restored when the cycle is made active again i.e. when increasing cycles.

7.4 Clearing Cycles

Individual cycles and also all automation for a parameter can be cleared and reset to an original state.

▌ CLEARING CYCLES

1. Select the pattern and track.

2. To view the cycle page, Hold or double tap (CYCLES).

3. Press [CLEAR] + Press [VBx] for the value button that represents the cycle to clear and reset to the original value. This function operates in or out of edit mode.

4. The selected cycle is cleared and reset to original values. The button will flash to confirm

▌ CLEARING PARAMETER AUTOMATION

1. Select the pattern and track.

2. To view the cycle page, Hold or double tap (CYCLES).

3. Press [CLEAR] + Press (Knob) for the parameter automation to clear and reset. This function operates in or out of edit mode.

4. The selected parameter automation is cleared and reset to original values. Note that some parameter resets will also affect other parameters. For example if repeats and pitch are set to a cycle and pitch is cleared, the repeats also will be removed. However if only repeats are removed, pitch will stay in tact.

7 Cycles & Random

7.5 Arranging Cycles

Cycles can be copied and pasted into other cycle slots. Cycle 1-16 can be copied to any other 1-16 slots. Note that while cycles can be copied to inactive slots, this will require a cycle to be active in order for it to play. Multiple cycles can also be selected and edited together.

▌ COPYING & PASTING OF CYCLES

1. Select the pattern and track.

2. To view the cycle page, Hold or double tap (**CYCLES)**.

3. Copy / Paste can be performed in or out of edit mode.

4. Keep holding **[CTRL]** + **[COPY]** throughout.

5. To copy a cycle, Hold **[CTRL]** + **[COPY]** + Press **[VBx]** value button of the source cycle 'x' to copy. Keep holding **[CTRL]** + **[COPY]**.

6. The button will flash GREEN ■ to indicate copy to clipboard.

7. While still holding **[CTRL]** + **[COPY]** + Press **[VBx]** to paste into the destination cycle slot 'x'.

8. The destination button will flash GREEN ■ to indicate paste.

9. Note that existing cycles are overwritten.

Hold [CTRL] + [COPY] throughout

Copy
+ [VB2]

Paste
+ [VB6]

Cycles, in this case [VB6} must be active in
order for the pasted cycle to be played.
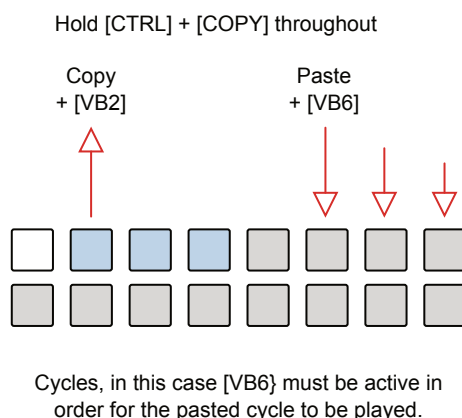
7.6 Cycle Behaviour Notes

Editing individual cycles is possible in edit mode. When not in edit mode, any adjustments will apply across all cycles. The [BANK] button is unlit when cycle edit mode is inactive and when edit mode is active is lit RED ■.

- Edits to parameters outside of cycle mode will be applied to all automated cycles.

- Changes made outside of edit mode to parameters will be applied relatively to all cycles.

- Using **[VBx]** Value buttons when editing inside a parameter out of cycle edit mode will make absolute changes to all cycles. This means automation is cleared.

- Each cycle can have its own per-step edit settings. All parameters can be automated within cycles except delay, length, quantize and tempo.

- Hold **[CTRL]** + **[BANK]** in cycle view to switch directly to the pulse sequencer view.

- Multiple cycles can be selected and edited together.

7.7 Randomisation Overview

Random is a function that operates globally as a 16 step sequence in parallel to all of the primary T-1 parameters. It allows random and unpredictable variations to be applied to parameter values over the period of the random sequence. The sequence can be slewed. Think of this as a generative random modulation sequence lane per parameter.

(*PARAMETER*)
+
(RANDOM)

Modulation applied to the parameter.
Sets Amount

Phase Shift   Slew

Parameter Lane

Parameter Lane

(RANDOM)
0% - 100%

Modulation Range
Sets Variance

RATE

[CTRL]
+
(RATE)

Rate of Random Sequence.
Sets Division.

Local
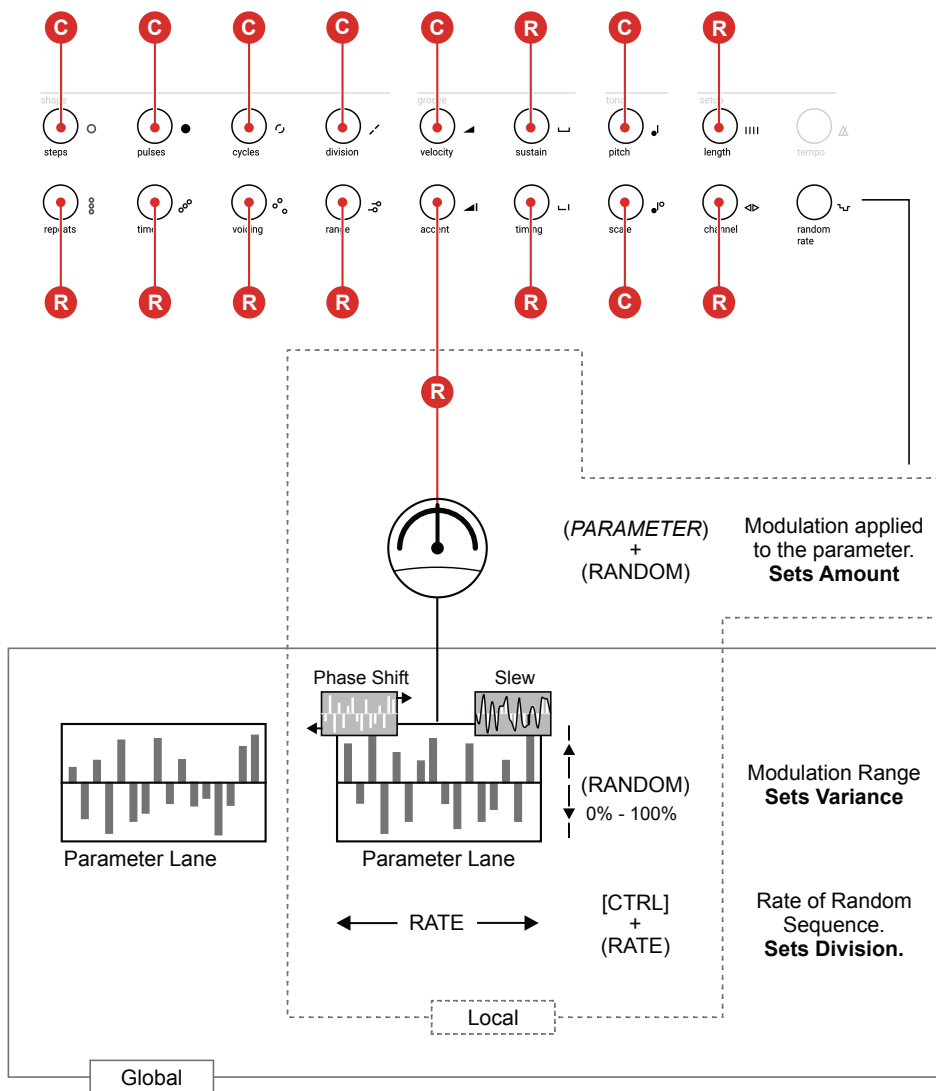
Global

Random operates as a global function affecting all randomised parameter sequences. Specific parameters have the amount of modulation set individually.

Cycle Controlled
Governed by Cycle iterations. Length determined by steps & division.

Rate Controlled
Governed by Step iterations. Time division set by rate.
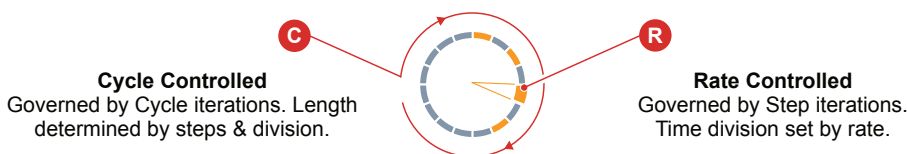
7.8 Random Selectable Parameters

The primary parameters labelled with the white text font are typically the ones that can be randomised plus also the secondary function probability. Tempo is an exception and cannot be randomised. The random modulation amount setting is bi-polar.

	Parameter	Control	Affects
1	Steps	Cycle	Changes the number of steps after each cycle.
2	Pulses	Cycle	Changes the number of pulses after each cycle.
3	Cycles	Cycle	Probability of skipping or repeating a cycle
4	Division	Cycle	Probability of the division multiplier macro being applied plus triplets / quadruplets in negative range.
5	Velocity	Cycle	Velocity of Individual pitch menu notes. Monophonic random when set left / negative, polyphonic random when set right / positive.
6	Pitch	Cycle	Transposes the notes on each cycle. Monophonic random when set left / negative, polyphonic random when set right / positive.
7	Scale	Cycle	Applies a new Scale algorithm adjustment for major / minor changes after each cycle
8	Sustain	Rate	Amount of randomisation applied to extend the sustain value. Monophonic random when set left / negative, polyphonic random when set right / positive.
9	Repeats	Rate	Number of repeats after each pulse
10	Time	Rate	Probability of the division multiplier macro being applied plus triplets / quadruplets in negative range
11	Voicing	Rate	Adds randomness to voicing - range right / positive or style parameter - range left / negative
12	Range	Rate	Amount of melodic note movement. Monophonic random when set left / negative, polyphonic random when set right / positive.
13	Accent	Rate	Velocity of notes. Monophonic random when set left / negative, polyphonic random when set right / positive.
14	Timing	Rate	Adjusts micro-timing. Monophonic random when set left / negative, polyphonic random when set right / positive.
15	Channel	Rate	The change of notes transmitted. Monophonic random when set left / negative, polyphonic random when set right / positive.
16	Probability	Rate	Probability. Evaluated per step.
17	Length	-	Length of current track and random start point for positive settings.
18	CC Tracks	-	Applied the random 16 step bi-polar sequence to the CC value of a CC track parameter.

Polyphonic Random: Applies random changes to each note differently. The setting is adjusted in the positive / right side random coarse range.

Monophonic Random: Applies random changes to all notes equally. The setting is adjusted in the negative / left side random coarse range.

7 Cycles & Random

7.9 Parameter Randomisation

Multiple parameters can be randomised. The global amount of randomisation can be adjusted as well as the time division rate. Random is set up and applied in conjunction with one or more parameter controls.

Random + Parameter View Mode.

WHITE ■
Fine Tune & Select

BLUE GREY ■
Phase Shift Modulation

Random Parameter View
Hold (RANDOM) +
Press (Knob).

PINK ■
Coarse Values

BLUE GREY ■
Phase Shift Modulation

-100%   +100%
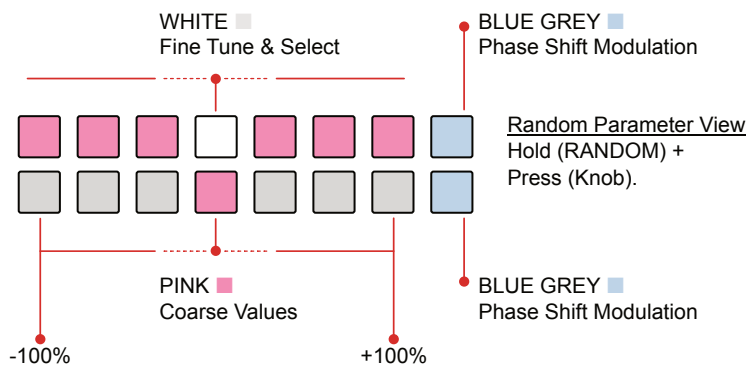
Holding (RANDOM) + Turn (Knob) will adjust the amount of modulation that is applied to the selected parameter. The WHITE ■ button will flash when slew is applied.

Random Probability View Mode.

Loops Sequence

PINK ■
Probability % Set

Random Probability View
Hold (RANDOM)

BLUE GREY ■
Off
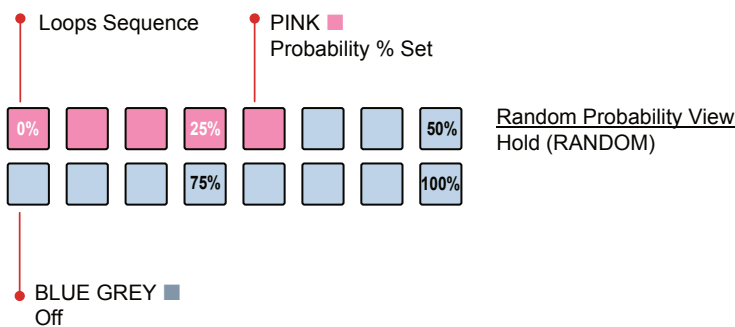
Turning (RANDOM) will adjust the probability of a random event happening. 100% means the random progression will always happen. A value in between will apply % probability of a random event happening.

▎APPLYING RANDOMISATION TO A PARAMETER

1. Select the pattern and track.

2. To view the random page, Hold or double tap **(RANDOM)**.

3. To view the random state. Keep holding **(RANDOM)** + Press **(Knob)**. Where Knob is one of the available random selectable parameters.

4. Apply an amount of randomisation to a parameter, *i.e.* one of the available random selectable parameters.

   • Keep holding **(RANDOM)** + Press **(Knob)** + Press **[VBx]**. The option is bi-polar and can be adjusted +100% **[VB16]** and -100% **[VB9]**. Note double tap **(RANDOM)** to keep this option selected and then press **(Knob)** + **[VBx]** to change the setting. Quick method which will also visualise state.

   • Keep holding **(RANDOM)** + Turn **(Knob)**. The option is bi-polar and can be adjusted +100% Clockwise and -100% Counter-clockwise.

   • Keep holding **(RANDOM)** + Press & Turn **(Knob)**. The option is bi-polar and can be adjusted +100% Clockwise and -100% Counter-clockwise. Slower but will also visualise the state.

5. The Phase can be changed to 'slide' forward or backward the random sequence for the parameter to create even more variation. Hold **(RANDOM)** + Press **(Knob)** + Press **[VB8]** or **[VB16]** to iterate the phase shift one step each press.

6. The sequence shape can be slewed for a smoother pattern. Hold **[CTRL]** + **(RANDOM)** + turn **(Knob)** to apply slew.

7. Repeats steps 3-5 for other parameters to build more movement and interest into the sequence.

Phase shift and slew of Random Sequence

[VB8]   [CTRL] + (RANDOM) + Turn (Knob)   [VB16]

                        Slew Shape
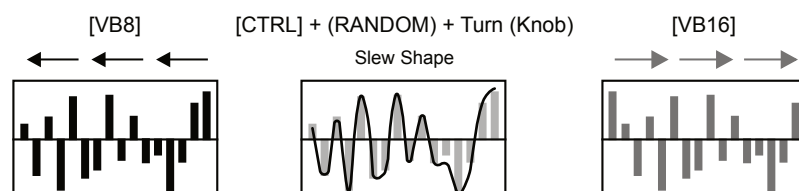
Each parameter has a modulation sequence lane to manage the randomisation variation. This can be phase shifted for more interest. Each press of [VB8] will phase shift steps earlier, [VB16] will phase shift steps later. In addition a slewed ,smoothing feature can be applied to the sequence shape.

7 Cycles & Random

The three key parameters in applying random modulation start with the amount of randomisation. This is a parameter specific setting and when a value is assigned then randomisation is applied. The second parameter is to ability to shift the phase of the random modulation forward or back. These are local parameters applied to each parameter's modulation sequence. The third option is a global value which sets the overall evolution of the random sequence, generating the random step values and range.

Think of the randomisation control as evolving the values of the modulation sequence, as well as changing multiple related algorithms simultaneously,

▌ ADJUSTING THE RANDOM PROBABILITY

1. Select the pattern and track.

2. To view the the probability amount, Hold or double tap **(RANDOM)**.

3. Applying randomisation.

   • Keep holding **(RANDOM)** + Press **[VB1]** - **[VB16]**. The option adjusts the amount 0-100%. Note, double tap **(RANDOM)** to keep this option selected and then press **[VBx]** to change the setting. Fastest and will visualise the active state.

   • Turn **(RANDOM)**. The option adjusts the amount 0-100%.

   • Hold & Turn **(RANDOM)**. The option adjusts the amount 0-100%. Slower but will visualise the active state.

4. The 0% value i.e. all value buttons lit BLUE GREY ▧ will loop the random sequence. A value of 100%, all value buttons lit PINK ▨ will always apply randomisation.

Random Sequence Evolution
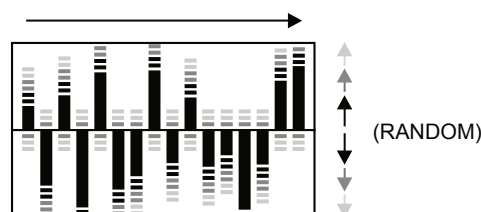
(RANDOM)

Random has a nominal 0-100% range but is not simply a linear value change. This sets the cyclic value shape of the random sequence as it evolves and is regenerated

7.10 Parameter Randomisation Behaviour

The behaviour of each parameter randomisation and the adjustment controls will be specific to each parameter. The general operating controls and adjustment process is the same but the outcome may be different.

The descriptions refer to the respective parameter when randomising i.e. random + parameter value button view. The options are not always a linear +/- value but may apply an algorithmic or inversion change.

Steps

Change at end of cycle.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Reduces the number of steps to a random triplet / quadruplet number at the change of each cycle.	Increases the number of steps to a random number at the change of each cycle.

Pulses

Change at end of cycle.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Reduces the number of pulses to a random number at the change of each cycle.	Increases the number of pulses to a random number at the change of each cycle.

Cycles

Change at end of cycle.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Probability to repeat any cycles which have been played prior.	Probability to skip any cycles which may be played in the future.

Division

Change at end of cycle.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Negative sets the chance of converting between quadruplet < > triplet values and also multiplication x2.	Positive sets the chance of division multiplication x2.

Velocity

Change at end of cycle.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Applied to the notes as assigned in the pitch menu. Changes all the notes equally with monophonic random behaviour.	Applied to the notes as assigned in the pitch menu. Changes each note differently with polyphonic random behaviour.

7 Cycles & Random

Pitch

Change at end of cycle.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Transposes the pitch menu notes at the end of each cycle. Changes all the notes equally, same chord shape, with monophonic random behaviour.	Transposes the pitch menu notes at the change of each cycle. Changes each note differently with polyphonic random behaviour.

Scale

Change at end of cycle.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Ignores the selected scale and applies a major / minor scale shift based on the circle of fifths and with reference to the current root.	Ignores the selected scale and applies a major / minor scale shift based on the circle of fifths and with reference to the current root.

Sustain

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Amount of random sustain note extension. Changes all the notes equally with monophonic random behaviour.	Amount of random sustain note extension. Changes each note differently with polyphonic random behaviour.

Repeats

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Reduces repeats on each step.	Increases repeats on each step.

Time

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Negative sets the chance of converting between quadruplet < > triplet values and also multiplier x2 being applied.	Positive sets the chance of the division multiplier x2 being applied.

Voicing

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Adds randomness to the style parameter.	Adds randomness to the voicing parameter

Range

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Randomises in semitone decrements the range variation for individual notes. Changes all the notes equally with monophonic random behaviour.	Randomises in semitone increments the range variation for individual notes. Changes each note differently with polyphonic random behaviour.

Accent

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Velocity accent randomised for the notes as assigned in the pitch menu. Changes all the notes values equally with monophonic random behaviour.	Velocity accent is randomised for the notes as assigned in the pitch menu. Changes each note differently with polyphonic random behaviour.

Timing

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Applied to the notes as assigned in the pitch menu. Changes all the notes equally with monophonic random behaviour.	Applied to the notes as assigned in the pitch menu. Changes each note differently with polyphonic random behaviour.

Channel

Change per Step.

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Changes all the notes to a channel equally with monophonic random behaviour.	Changes each note to a channel differently with polyphonic random behaviour.

Probability

Change per Step

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Probability is affected directly by the (RANDOM) control which also allows modulation to be reloaded. Probability of pulses including repeats being silenced.	Probability is affected directly by the (RANDOM) control also allows modulation to be reloaded. Probability of only notes being silenced.

Length

Not Specifically linked to Cycle or Step

Negative Range - Value Buttons Left	Positive Range - Value Buttons Right
Length has it's own randomisation algorithm and is not affected by (RANDOM) knob.	Start point is randomly set to give a beat repeat effect.

8

MIDI & WiFi Connectivity

T-1 is a sequencer which relies on it's connected devices to orchestrate a musical production. Connectivity is therefore at the heart of T-1 and the multiple options such as MIDI, CV and WiFi all contribute to its versatility. MIDI is the most common protocol for connecting musical gear. Having the traditional 5 Pin DIN and also USB options available covers most bases, but bear in mind USB is also the connection for the T1 power supply input. T-1 has a MIDI USB C-Type connection plus MIDI DIN which is interfaced using a Type 'A" MIDI to Mini Jack adapter. Ableton Link is a wireless technology that allows remote synchronisation and transport control between devices. This is a technology also supported by T-1. So what does all this really mean? T-1 has the ability to connect to various devices, for example by USB to control PC/Mac based Digital Audio Workstations and associated plugins as a software solution. It can control desktop synthesizer modules using traditional MIDI connections and even connect to tablets and mobile devices. Setting the configuration and following the right techniques is important. To truly know how the output of the T-1 sequencer and it's patterns generate sounds and music is something that relies heavily on the connected instrument. It is normal practice to have devices connected while composing patterns and generally develop by ear more than by process alone. Generating and creating tracks is an iterative and artistic process. The default configuration should be ok to get started with the MIDI and WiFi setup, but settings can be changed using the T-1 config tool. Getting the right sound by adjusting synths parameters, settings and creating a sound is of course a prerequisite in composing music with T-1. Remember T-1 is part of a musical setup and relies fully on the connected gear sounds and behaviour to deliver its full creative power.

8 MIDI & WiFi Connectivity

8.1 MIDI Definitions

In order to clarify some of the terminology and technology around MIDI with respect to the T-1 a summary of key definitions is provided. T-1 uses a TRS to Type A 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).

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).

MIDI

Musical Instrument Digital Interface. A protocol for communicating between electronic musical gear. Never connect MIDI gear to incompatible DIN signals. T-1 has USB and 5 Pin MIDI connectivity options.

MIDI CC

MIDI Control Control and Note change messages are used to communicate messages across MIDI with values of 0-127. Control Changes (CC) affect parameter values. T-1 can control 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, one which controls the clock and transport and is the central lead. It is typical for T-1 to be a primary lead. A device which will be controlled by, and will follow the primary lead device and which will be subservient by responding to the main control messages will be called a 'secondary follower'. A synthesizer module could be a typical secondary follower.

8.2 MIDI Hardware Connections

The rear of T-1 is the location for the input / output connections for external gear. These can be configured within T-1 but act as the physical interface between other hardware and software systems.

MIDI IN using a 3.5mm Jack to 5 Pin MIDI adapter type A.

MIDI USB-C
USB-C to USB-A cable
(one supplied)

MIDI Out, using a 3.5mm Jack to 5 Pin MIDI adapter type A. (one supplied)

MIDI Thru, using a 3.5mm Jack to 5 Pin MIDI adapter type A.
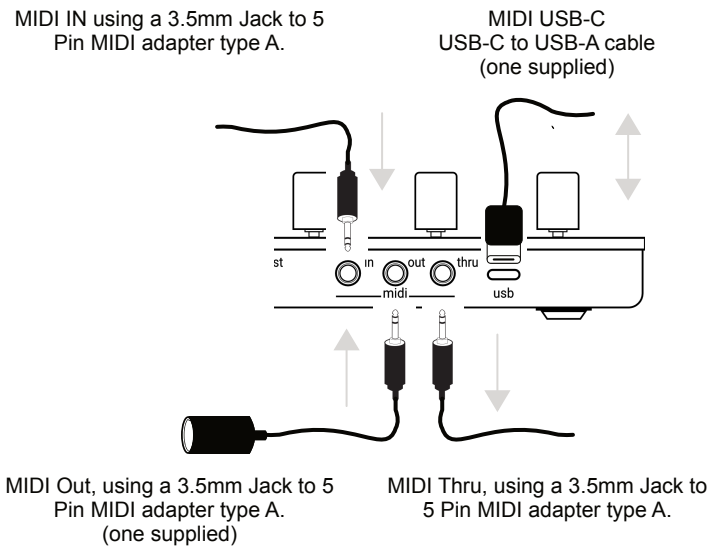
MIDI OUT
Transmits all MIDI sequencing and control information to a connected device, system or application. For example a T-1 sequence will control a MIDI synth module.

MIDI IN
T-1 receives MIDI information which can be directed straight out to MIDI Thru port or can be processed by T-1 internal MIDI FX Track functions before sending to the MIDI Out port. This is a unique and creative way to use T-1 as a MIDI processor when sequencing on another device.

MIDI THRU
Transmits all MIDI information received on the MIDI input port to the MIDI Thru output. T-1 does not affect the incoming MIDI and Thru is a replication of MIDI In data. This is default behaviour but can be set as a second MIDI Out in the T-1 Config settings.

MIDI USB
Transmits and receives MIDI from an external device. The USB connector also acts as T-1 power source.

8 MIDI & WiFi Connectivity

8.3 MIDI Channel

The MIDI Channel setting is directly accessible from T-1 front panel. It is important that the receiving device is matched up with the T-1 MIDI Channel. Multiple channels can be set per track. The Channel is set on T-1 per track enabling multiple devices to be controlled simultaneously. Default is for the channel to match the track number.

setup

length
quantize

tempo

channel
output

random
rate

Channel View per Track

WHITE ☐
Selected Channels

GREEN ☐
Available Channels

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
Channel View

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
Hold (CHANNEL)

▌ ADJUSTING THE TRACK MIDI CHANNEL

1. Select the pattern and track. MIDI Channel is set per track.

2. To view the current MIDI channel, Hold or double tap **(CHANNEL)**. The WHITE ☐ lit value button will indicate the currently selected channels. Value buttons represent channels. **[VB1]** = Channel 1, **[VB2]** = Channel 2, up to **[VB16]** = Channel 16

3. To select a channel use one of the options:-

   • While the channel page is on display, press one or more GREEN ☐ value buttons to select a new channel. The currently selected channels are displayed WHITE ☐.

   • Turn **(CHANNEL)** to change channel while visualising the setting on the value buttons.

   • Press & Turn **(CHANNEL)** to change channel.

8.4 MIDI Configuration Considerations

The global MIDI settings are accessible within T-1 using the T-1 Config tool. Most default settings should be good to get started but in some circumstances these may need to be changed. The actual settings to use are highly dependant on the hardware configuration applied. The main T-1 MIDI settings to consider are found in the MIDI I/O page.

T-1 Config is a Mac/PC utility so standard mouse commands are used to edit. More information on the general T-1 Config tool is given later.

T-1 Config - MIDI i/o Page

MIDI USB

MIDI usb	Notes	Clock	Start / Stop	Prg. Change
In	On	Off	Off	Off
Out	On	On	On	Off
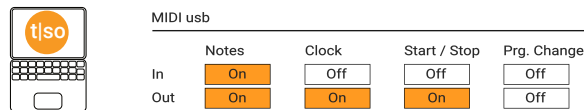
Controls the behaviour of the MIDI communications across the USB connection. USB allows MIDI messages to be sent and received across the connection. Settings for In and Out can be configured independently. Illustration shows defaults.

Notes: MIDI Note filter that, when ON, prevents notes being sent out of the T-1 USB port.

Clock: Normally this would be ON for messaging out. This will allow T-1 to be the primary controller governing the clock timing of the setup. Connected follower devices should then be set to receive an external clock. Typically only one device controls clock in a system. The clock can also be set to on to receive clock signals in, thereby controlled externally. T-1 Clock hierarchy is 1. Analog Clock, 2. MIDI Clock, 3. Link. Tempo is disabled when an external MIDI clock is in control.

Start / Stop: The T-1 Start and Stop commands would be transmitted to other devices when ON. Equally the Start and Stop messages from another device can be received by T-1 when set to ON within the MIDI usb 'in' section.

Prg Change: MIDI Program change messages allow presets or patches to be changed on the receiving device. When set to ON the T-1 can send 'out' or receive 'in' a program change message. The actual behaviour is very much device dependant.

MIDI trs

MIDI trs	Notes	Clock	Start / Stop	Prg. Change
In	On	Off	Off	Off
Out	On	On	On	Off
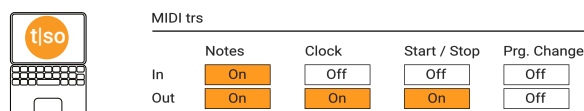
Controls the behaviour of the MIDI communications across the MIDI TRS connection. This would be connected to the MIDI Type A dongle for 5-Pin MIDI connections. This allows MIDI messages to be sent and received across the connection. Settings for In and Out can be configured independently. Illustration shows defaults. The descriptions of each function operate the same ways as the USB MIDI settings described above.

8 MIDI & WiFi Connectivity

The option to re-configure the MIDI Thru connection as a second MIDI out is possible within the config options. Instead of the default behaviour where the MIDI through reflects the MIDI incoming messages, the MIDI thru will reflect the MIDI Out messages.

T-1 Config - MIDI i/o Page

Thru Port Functionality

Thru port functionality [Thru] [Out]
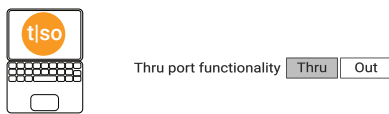
When set to 'Thru' the MIDI Thru trs port located at the rear of the device will act as normal, reflecting any incoming MIDI messages from the MIDI in connection also to the thru port. When this is set to 'Out' the MIDI Thru trs port at the rear will operate as a second MIDI output port. This will reflect the MIDI messages sent to the out also at the thru trs port. An additional set of MIDI trs 'Out2' options will also be available for configuration specifically of this second output.

MIDI Thru

Default behaviour is for the MIDI in messages to be also directed to the MIDI Thru port. MIDI out is independent.
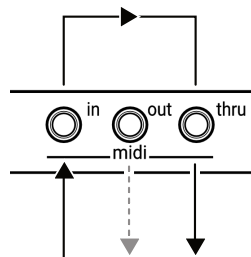
MIDI Out 2

Optional behaviour is for MIDI Out messages to be also directed to the MIDI Thru port as a 2nd Output. MIDI In is independent.
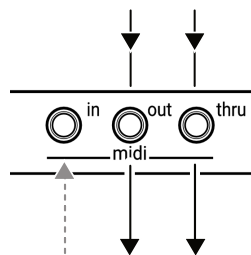
8.5 MIDI CC Track Overview

So far all the descriptions and guides have focussed on note based sequencing. T-1 also has the ability to sequence and communicate MIDI CC - Control Change messages. Tracks by default are note tracks, signified by the ORANGE ■ track colours. CC Tracks are coloured CYAN ■. FX Tracks are coloured MAGENTA ■.

What is MIDI CC?

In the standard MIDI protocol CC represents Control Change messages. Instead of triggering and controlling note data, CC controls a specific parameter and its values. MIDI implementation for devices usually has CC assignments pre-mapped to specific parameters.Some devices can be mapped peer to peer manually. The device documentation will usually identify and tabulate details of Control Change implementation and which CC number represents which of its parameters and the ranges applied.

T-1 MIDI CC Track

The CC track mode can be selected when working with control change sequencing as opposed to note message sequencing.

ORANGE ■
Selected Note Track(s)

CYAN ■
CC Track(s)

Track View
Default 'home' view. Shows the selected track(s) with the value buttons.

MAGENTA ■
FX Track(s)
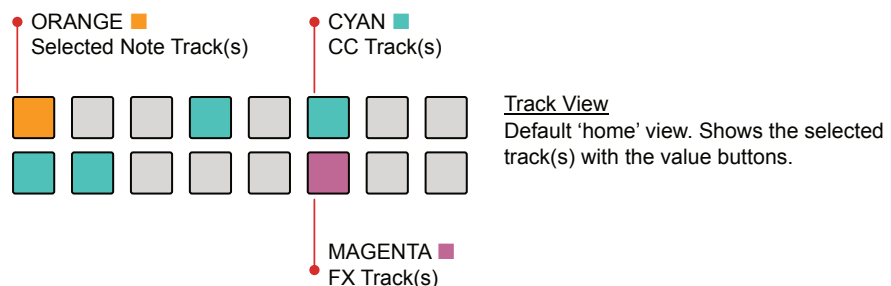
▌ SELECTING CC MODE FOR A TRACK

1. Press [BANK] to ensure the 'home' track view is in focus. The track view will be shown by default at start up. Currently playing tracks will flash.

2. Track view will be displayed which by default allows editing of notes and therefore the active tracks will illuminate ORANGE ■.

3. To select a track in CC mode. Hold [CTRL] + [VBx] where 'x' is the value button for the track to select. CC Tracks will illuminate CYAN ■. Pressing [CTRL] + [VBx] cycles through note, CC or FX track mode.

8 MIDI & WiFi Connectivity

8.6 MIDI CC Applications

Control Change mode can be used for several applications. The Shape, Groove and Tonal knobs are pre-defined with CC assignments and can therefore be applied or sequenced to change the values. The Random control can also apply a pseudo-random sequence. CC values can be stored in tracks which will act as a preset patch, triggering CC changes when a new pattern and hence track is loaded or changed.

External Device

CC# and CC Value

Parameter → Value change applied within device operation

CC# CC# CC# CC# CC# CC# CC#

Pre-set or sequenced Knobs send CC values

CC values stored as a 'patch' in a track

(RANDOM)
Pseudo-Random CC sequences
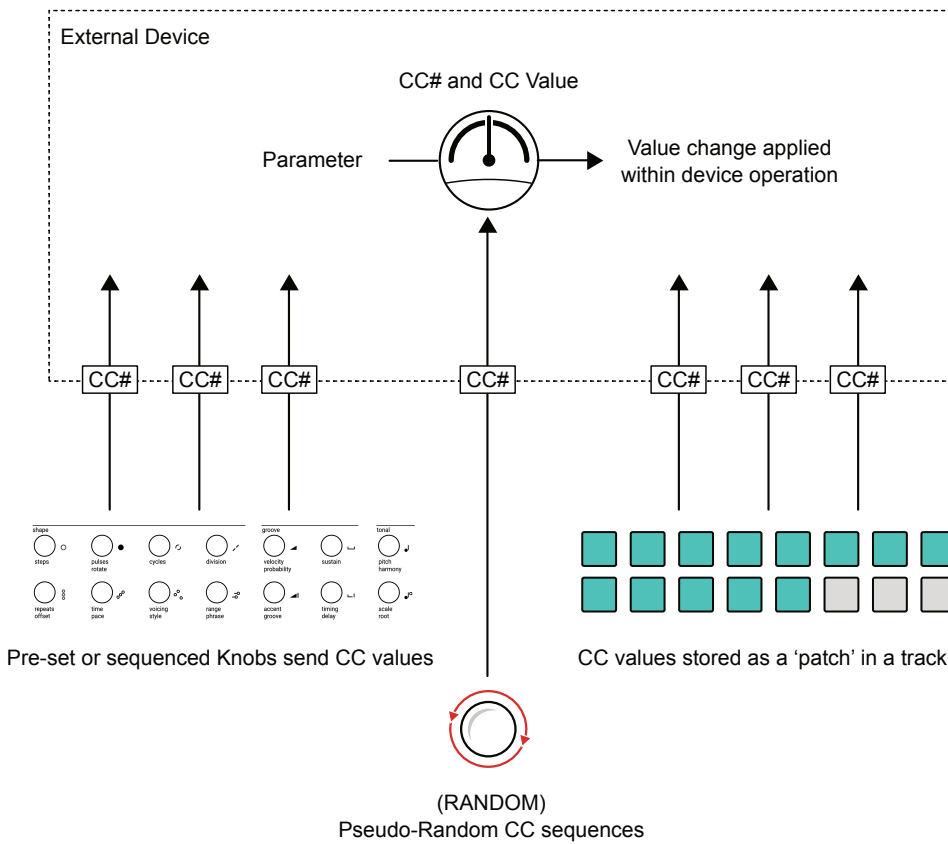
The CC Messages are transmitted and received across the MIDI connection and on the MIDI Channel assigned to the track.

8.7 MIDI CC Manual Knob Control

The T-1 has a pre-defined set of CC parameter numbers assigned to the control knobs when in CC Mode. These numbers ensure the source CC matches up with the destination CC number. The value of the control assigned to the CC number is then dynamically applied to the equivalent destination parameter. The default assignments are CC70 - CC83 however these can be redefined for each track.
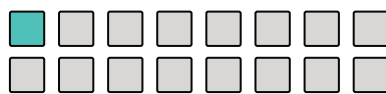
With a CC track the knobs can control the defined CC# parameters for the track

#70	#71	#72	#73	#74	#75	#76
shape				groove		tonal
steps	pulses rotate	cycles	division	velocity probability	sustain	pitch harmony
repeats offset	time pace	voicing style	range phrase	accent groove	timing delay	scale root
#77	#78	#79	#80	#81	#82	#83
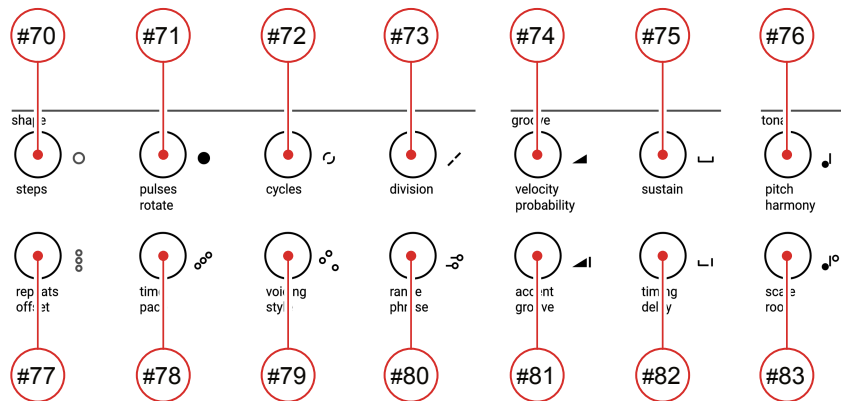
Turn (Knob) or Hold & Turn
<u>Relative Adjustment</u>

The parameter value sent from / to the CC#, will be determined by the knob position.

Hold (Knob) + [VBx]
<u>Absolute Adjustment</u>
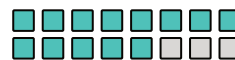
Value sent from / to the CC#, determined by the value button.

0 - 127

Typically CC range is 0-127 although this may differ between devices. T-1 Range is 0-127. As well as checking the CC number, the parameter range should also be checked for the destination device. Some parameters ranges for example may be bi-polar -64 to 63.

8 MIDI & WiFi Connectivity

▌ MANUALLY CONTROLLING EXTERNAL GEAR CC FROM T-1

1. Ensure the T-1 and the target device are connected by MIDI USB or 5 Pin DIN. Parameters to enable T-1 to communicate to the device such as Channel must be set. Some devices need to be set to receive CC.

2. Press [BANK] to ensure the 'home' track view is in focus.

3. Select a track in CC mode. Hold [CTRL] + [VBx] where 'x' is the value button for the track to select. CC Tracks will illuminate CYAN ■. Notes tracks will illuminate ORANGE ■ and FX Tracks MAGENTA ■.

4. The 14 rotary knobs in the Shape, Groove and Tonal section will be preassigned to CC numbers, 70-76 Top row and 77-83 bottom row.

5. The mapping of the external device parameters is usually documented in the manual. This is called the 'MIDI Implementation' of a device. In this example, assume destination CC74 is Filter Cutoff.

6. To adjust the CC with T-1's default CC assigned;

   • Relative adjustment. Turn (VELOCITY) control knob will affect CC74 and therefore will manually adjust cutoff on the destination device. This is a relative change and can adjust up or down from the current parameter value.

   • Absolute adjustment. Hold (VELOCITY) + Press [VBx], where 'x' is a value button that represents an absolute value in the 1-127 range to send to the destination device.

Example

Press (Knob) + [VBx]
Absolute Value Setting

Step

96

CC #74 — Example Filter Cutoff

63 ← - 64 + → 65

Sweep

Turn (VELOCITY)
Relative Value Adjustment
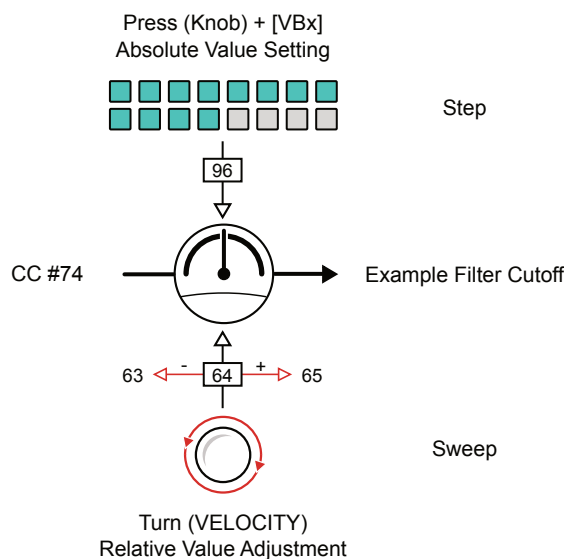
Changing a CC Assignment

While T-1 has a set of predefined MIDI CC numbers per track, these can be changed. This is useful to match up T-1 Tracks to different devices and parameters and ensure maximum versatility in working with other CC's.
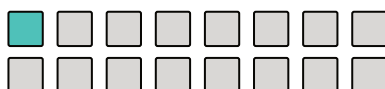
CC assignments for knobs can be made in CC mode for the track.

Knobs can be assigned a new CC number. Double press (Knob) to select for editing and to lock the value display view.
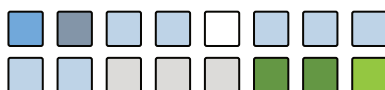
To select editor view, with knob parameter value view selected;
Hold [CTRL] + [PATTERN].

BLUE ▨
Unit Numbers

WHITE ▨
Selected Value for Digit

0	1	2	3	4	5	6	7
8	9				100	100	100

CC Edit View

GREEN ▩
Unit Digit - '00<u>0</u>' - Selected

DARK GREEN ▩
Tens Digit - '0<u>0</u>0' - Not Selected

DARK GREEN ▩
Hundred Digit - '<u>0</u>00' - Not Selected

Hundred option toggles between 1xx lit WHITE ▨ and 0xx BLUE ▨

▌ CHANGING T-1 CC KNOB ASSIGNMENTS

1. Press **[BANK]** to ensure the 'home' track view is in focus.

2. Select a track in CC mode. Hold **[CTRL]** + **[VBx]** where 'x' is the value button for the track to select. CC Tracks will illuminate CYAN ■. Notes tracks will illuminate ORANGE ■ and FX Tracks are coloured MAGENTA ■.

3. The 14 rotary knobs in the Shape, Groove and Tonal section will be preassigned to CC numbers, 70-76 Top row and 77-83 bottom row or will contain edited CC number assignments.

4. The mapping of the external device parameters is usually documented in the manual. This is called the 'MIDI Implementation' of a device. CC's would normally be defined based on the target parameters required.

5. Enter edit mode for CC assignments:

    • Double Press **(Knob)**, for the rotary knob to edit. The value will be shown on the value buttons.

    • Press **[CTRL]** + **[PATTERN]** to enter CC edit mode.

    • The display is now locked to the CC edit view.

6. To check or edit the setting, example sets the value of velocity from the default 74 to 95:-

    • Press **[VB14]**. This represents the '1̲00' digit range. Press to toggle **[VB1]** = '0' or **[VB2]** = '1'. These toggle the hundreds digit. In this example, should be off for 0̲95.

    • Press **[VB15]**. This represents the '10̲0' digit range. Press to toggle **[VB1]** = '0' to **[VB10]** = '9'. These toggle the tenths digit. In this example, should be **[VB10]** for 09̲5.

    • Press **[VB16]**. This represents the '100̲' digit range. Press to toggle **[VB1]** = '0' to **[VB10]** = '9'. These toggle the units digit. In this example, should be **[VB6]** for 095̲.

7. Once completed, press **[CTRL]** + **[BANK]** to switch to the selected parameter value view or press **[BANK]** to return to the track home view.

8.8 Sequencing MIDI CC Tracks

Sequencing CC values across a track pattern is possible in T-1. This will allow CC automation to be performed across the track. Steps can be assigned individual CC values.

Example: CC Sequence
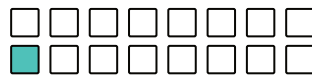
Double tap [VBx] for a CC track from the home page to select the CC track sequencer

CYAN ■
CC Step
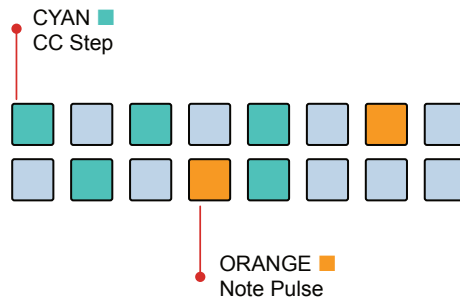
CC Sequencer View
Shows the note pulses and CC step edits. Button flashes when editing.

ORANGE ■
Note Pulse

The CC values are applied to any step. The default global CC values will always be applied on steps that have not been assigned a step edit control change value. When a step edit is present on a step, CC Values stay until the next step edit.

Example: CC Sequence

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
CC #74	CC #74	CC #74	CC #74	CC #74	CC #74	CC #74	CC #74
64	G	32	G	127	G	G	G
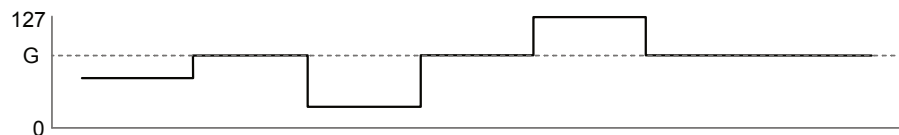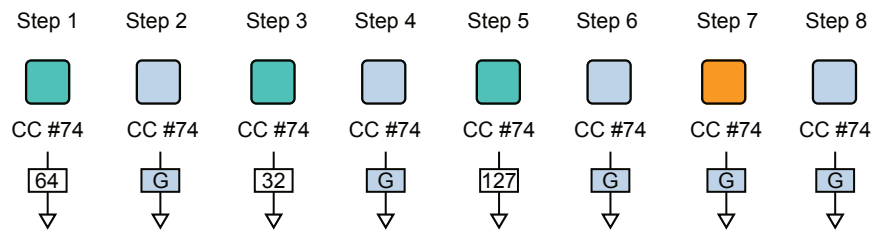
G Global Value

8 MIDI & WiFi Connectivity

| MANUAL PER STEP SEQUENCING - CC PARAMETERS

1. Set a Track to CC Mode by pressing **[CTRL]** + **[VBx]** to cycle through the track modes. A CC Track will illuminate CYAN ■.

2. Switch to CC Sequencing mode. Double tap **[VBx]** where 'x' is the value button representing the CC track to edit.

3. The value buttons will be shown as per the current track sequence. Pulses will be shown on steps if they exist.

4. To enter Per Step edit mode, Press **[VBx]** for the step to edit. A step does not necessarily need a pulse.

5. The selected step will flash to indicate the step is selected for editing. The **[BANK]** button will flash RED ■ to indicate that per step edit mode is active.

6. If required multiple steps can be selected to edit together.
   Hold **[VBx]** + **[VBx]** simultaneously, where 'x' represents each step to select for editing.

7. To edit the selected, flashing pulse, Turn the **(Knob)** for one or more CC parameter values to adjust. Each knob should have an assigned CC value. The parameter change is locked to the step and will illuminate CYAN ■ to indicate one or more parameters are locked to the step.

8. To clear CC step edits manually, Hold **[CLEAR]** + **[VBx]** where 'x' is the value button representing the step to clear. This will remove only the CC parameter values. Note track step edits will remain in tact.

9. Press **[BANK]** to exit per step edit mode. Outside of per-step editing mode, parameters are changed globally on all steps.

.

8.9 MIDI CC Tracks as Presets

The T-1 has the ability to store CC numbers along with values within a track. Each time the track is then loaded / launched the CC values are transmitted to the device. It may be useful to reserve CC tracks purely to set a parameter state on connected devices.

Example: CC Track Presets
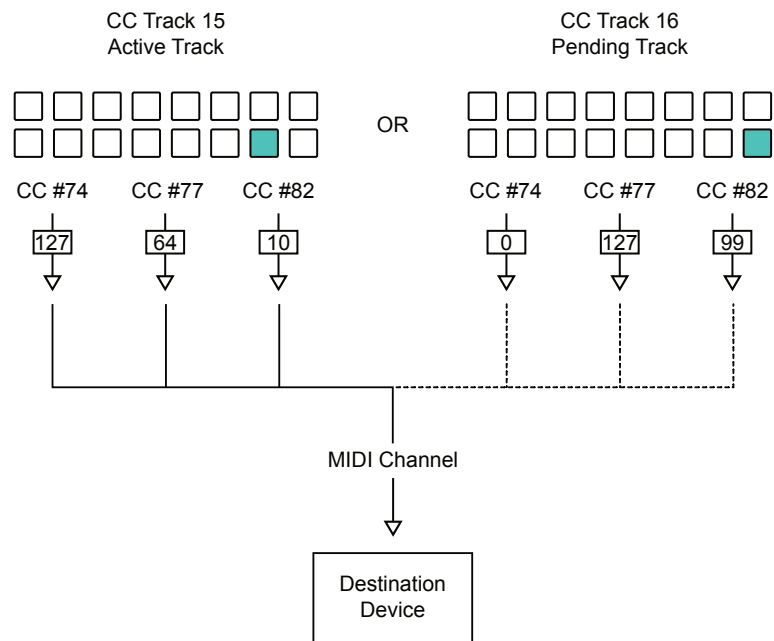
Tracks can be used to trigger or change a bank of CC values sent to a destination device. This is ideal for example in automatically setting up a synth parameter configuration at the start of a T-1 pattern.

Tracks: Tracks can be muted and unmuted to select the parameters to transmit. The CC values will be updated and transmitted when a track is triggered i.e. pressing Play.

Patterns: Changing patterns will also trigger the track. This is useful when changing CC's on the fly, within a song. A copy of the same pattern can be made, then change only the CC values for the preset tracks. This will then trigger the CC change with a pattern change but as the patterns are otherwise identical, the song will play as normal.

8 MIDI & WiFi Connectivity

CREATING CC PRESET TRACKS

1. Press **[BANK]** to ensure the 'home' track view is in focus.

2. Select a CC track. Press **[VBx]** where 'x' is the value button for the track to select. CC Tracks will illuminate CYAN ■. To create a new CC track Hold **[CTRL]** + **[VBx]**.

3. The rotary knobs should be set to the CC numbers required for the destination parameters as a pre-requisite action.

4. To create and store a CC value for a selected CC Parameter. Hold **[CTRL]** + Press & Turn **(Knob)** defined for the target CC number to store a value. An edited value is shown illuminated WHITE ▢ and the default, unedited values in CYAN ■ colour. If the CC assignment editor is still on show, use **[BANK]** to restore main view.

5. Hold **[CTRL]** + Press **(Knob)** to view a stored CC setting by viewing the illuminated WHITE ▢ value buttons. The value buttons **[VB1]** - **[VB16]** indicate the range 0-127. Press **(Knob)** to view the current manual CC setting, shown in CYAN ■ colour.

6. Repeat steps 4-5 to create and save more CC parameter values and develop a collection of variables to store as a preset track.

7. The parameter state will be transmitted when:-

   • A track is triggered to play. This is useful when sending the starting parameters for the device to control.

   • A pattern changes. This is useful to create on the fly CC preset changes. Patterns can be copied identically then change only the CC preset values saved. Changing between the two will run the same pattern but change the CC's.

CLEARING CC PRESET VALUE

1. Press **[BANK]** to ensure the 'home' track view is in focus.

2. Select a CC track to edit. Press [VBx] where 'x' is the value button for the track to select. CC Tracks will illuminate CYAN ■.

3. Hold **[CLEAR]** + Press **(Knob)** of the CC track parameter to erase.

4. When holding **[CTRL]** + Press **(Knob)** an edited CC setting illuminates the value buttons WHITE ▢ and will show original, reset values as standard CYAN ■ colour.

8.10 Random CC Sequence

The T-1 random sequence function can also be applied to each CC value represented by a knob. The random sequence is 16 steps long with uni-polar values that are added to the current CC value assigned to the knob.

Example: CC Track Random Sequence

CC #74 — Example Filter Cutoff

Slew

64

Knob Default — 40 — 24 — +24
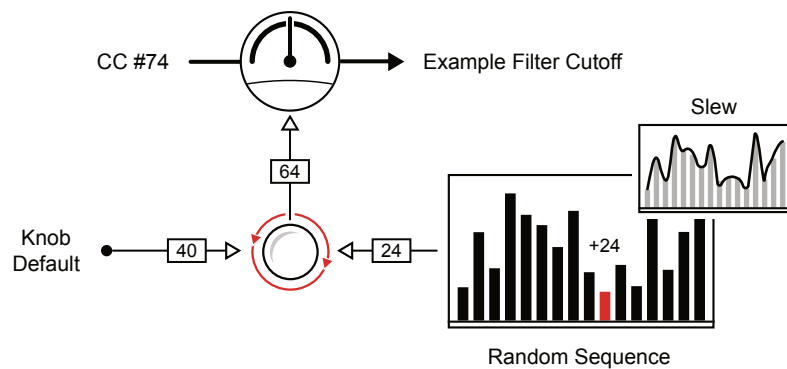
Random Sequence

The default parameter will be modulated in time with the 16 step random sequence. Each step of the random uni-polar sequence will affect the CC and create an evolving parameter change pattern including any slew setting.

▌ CREATING A RANDOM CC SEQUENCE

1. Press **[BANK]** to ensure the 'home' track view is in focus.

2. Select a CC track to edit. Press **[VBx]** where 'x' is the value button for the track to select. CC Tracks will illuminate CYAN ■.

3. Hold **(RANDOM)** + Press & Turn **(Knob)** of the CC track parameter to attach the random sequencer. Also pressing the value button when holding **(RANDOM)** + **(Knob)** will adjust the amount.

4. A slew option can be applied to smooth the sequence. Hold **[CTRL]** + **(RANDOM)** + Press & Turn **(Knob)** to apply the curve.

5. The random sequence will generate uni-polar values, step by step that are added to the current parameter value. This can add to or subtract from the CC value and generate a parameter change sequence.

8 MIDI & WiFi Connectivity

8.11 FX Track as a MIDI Effect Processor

Three track modes are available; Note, CC and FX. All modes operate in parallel. The FX mode for a track allows all incoming MIDI messages to be processed. All of the pattern tracks assigned as FX tracks will have the incoming MIDI routed through.

MIDI FX Track Routing Example

MIDI IN

Monitors All Channels

MIDI OUT

Defined Track Channel

FX Track

Chords for the pulses are determined by the incoming MIDI notes and not the pitch menu. The track parameters are applied to notes.

FX Track

Incoming MIDI notes are passed straight into the track real time. The track parameters are applied to the MIDI notes before output.

FX Track

Option to use the pitch menu as a live play keyboard. The MIDI notes manually played will be transmitted out. Incoming MIDI notes will be indicated ORANGE ■.

Tracks

FX Tracks allow the processing of incoming MIDI through the track. The T-1 features can be applied therefore to the MIDI notes. Think of this as replacing the pitch menu as the source of notes and chords.

CREATING AN FX TRACK

1. Press **[BANK]** to ensure the 'home' track view is in focus.

2. Select a track to edit. Press **[VBx]** where 'x' is the value button for the track to select. By default a Note track is lit ORANGE ▮.

3. Press **[CTRL]** + **[VBx]** where 'x' is the value button for the track to assign as a FX Track. This will cycle through the assigned modes between Note, CC Track and FX Track. Set the track to an FX Track mode where the value button will illuminate MAGENTA ▮.

4. Any incoming MIDI is processed through any enabled FX track and the associated parameter settings. If pulses are present the incoming notes or chords are applied to the pulse. If no pulses are set the MIDI will be transferred through as it is received.

5. The MIDI output will be fed to all of the assigned MIDI Channels. Set the channels by holding **(CHANNELS)** + **[VBx]**. Multiple channels can be assigned to the same track.

6. An audio device connected to the MIDI output will be controlled.

HARMONISING INCOMING MIDI IN AN FX TRACK

1. Ensure the track is set to an FX Track mode where the value button will illuminate MAGENTA ▮. Any incoming MIDI is processed through any enabled FX track and the associated parameter settings. If pulses are present the incoming notes or chords are applied to the pulse. If no pulses are set the MIDI will be monitored real time as it is received.

2. To view the incoming MIDI notes, Hold **[CTRL]** + Hold **(PITCH)**. To view the pitch menu

3. Hold **[CTRL]** + Turn **(PITCH).** Also While holding **[CTRL]** + **(PITCH),** press a **[VBx]** to select a note for harmonisation or Press **[VB8]** or **[VB16]** to transpose the notes.

8.12 FX Track as a MIDI Keyboard

The pitch menu becomes a MIDI keyboard from within FX tracks allowing live play of any connected instrument or device. Incoming MDI chords and notes received will also show ORANGE ■ in the Pitch menu.

MIDI FX Track Keyboard Example

FX Track

Pitch menu operates as a live playback controller, similar to a MIDI Keyboard.

Chromatic
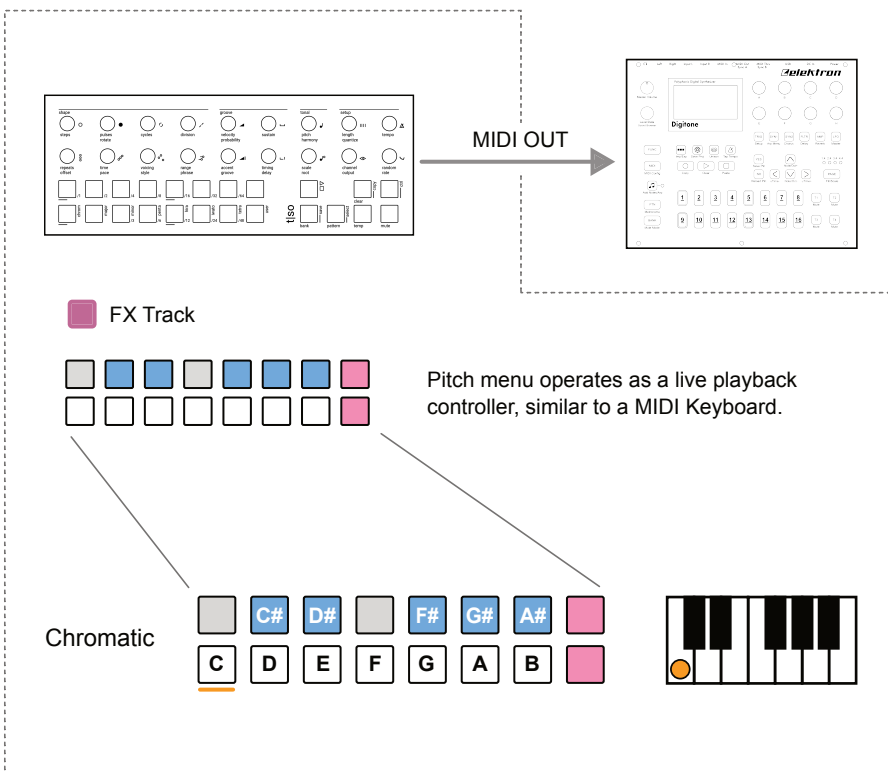
▌ FX TRACK AS A MIDI KEYBOARD CONTROLLER

1. Select or create an FX Track to edit. Press **[VBx]** where 'x' is the value button for the track to select. An FX Track is lit MAGENTA ■.

2. Turn **(CHANNEL)** to assign a MIDI out channel.

3. Select the Pitch Menu. Double tap **(PITCH)** or Double tap **[VBx]** for the FX track to lock the value button display as the note keyboard layout

4. Playing notes and chords will be transmitted to MIDI out. Both incoming MIDI and Manually played notes show as ORANGE ■.

5. The scale and root can be edited if required.

8.13 Routing Between Tracks

MIDI data can be routed out of one track and into another. This allows advanced MIDI configurations maximising the features of each track. This is useful to also create alternate settings available for selection or accessed by muting / unmuting. Muted tracks will not transmit data to a destination. Both source and destination track notes are combined to the output.

PATTERN 1

Select MIDI Channel Out: Turn (CHANNEL)

Select Track To Route to: Press [CTRL] + Turn (OUTPUT)

Routing From	Sequence Data	Tracks	Routing To
		Track 1	Track 9 ▶
		Track 2	Track 9 ▶
		Track 3	Track 12 ▶
		Track 4	MIDI Channel 2
		Track 5	MIDI Channel 2
		Track 6	MIDI Channel 3
		Track 7	MIDI Channel 4
		Track 8	
Track 1		Track 9	MIDI Channel 1
Track 2		Track 10	
		Track 11	
Track 3		Track 12	MIDI Channel 12

All track Notes are combined at the output.
E.g. Track 3 + Track 12 Notes

		Track 13	MIDI Channel 13
		Track 14	MIDI Channel 14
		Track 15	MIDI Channel 15
		Track 16	

8 MIDI & WiFi Connectivity

▌ ROUTING TRACKS

1. Select a Track to edit. Press **[VBx]** where 'x' is the value button for the track to select. A Note Track is lit ORANGE 🟧.

2. To route the track to a MIDI output channel:-

   • Turn **(CHANNEL)**. The value buttons will indicate the channels selected i.e. **[VB1]** is Channel 1, **[VB2]** is Channel 2.

   • The selected channels will be lit WHITE ⬜ while the other background buttons are lit in GREEN 🟩 colour.

   • Alternatively Hold **(CHANNEL)** + Press **[VBx]** to select.

   • Double tap **(CHANNELS)** to lock the channel value button view.

3. To route the selected track to the input of another track:-

   • Hold **[CTRL]** + Turn **(OUTPUT)**. The value buttons will indicate the tracks selected i.e. **[VB1]** is Track 1, **[VB2]** is Track 2.

   • The selected tracks routed will be lit WHITE ⬜ while the other background buttons are lit in BLUE 🟦 colour.

   • Alternatively Hold **[CTRL]** + **(OUTPUT)** + Press **[VBx]** to select.

8.14 MIDI Program Changes

Program change messages are mapped from T-1 banks and patterns used to select or change a destination device bank, preset or patch depending on it's designed behaviour. Program change messages are issued 1/8th before an actual T-1 pattern change.

Banks 1 - 8 Issues PC Messages on MIDI Channel 1

Pattern	Bank 1 PC	Bank 2 PC	Bank 3 PC	Bank 4 PC	Bank 5 PC	Bank 6 PC	Bank 7 PC	Bank 8 PC
1	1	17	33	49	65	81	97	113
2	2	18	34	50	66	82	98	114
3	3	19	35	51	67	83	99	115
4	4	20	36	52	68	84	100	116
5	5	21	37	53	69	85	101	117
6	6	22	38	54	70	86	102	118
7	7	23	39	55	71	87	103	119
8	8	24	40	56	72	88	104	120
9	9	25	41	57	73	89	105	121
10	10	26	42	58	74	90	106	122
11	11	27	43	59	75	91	107	123
12	12	28	44	60	76	92	108	124
13	13	29	45	61	77	93	109	125
14	14	30	46	62	78	94	110	126
15	15	31	47	63	79	95	111	127
16	16	32	48	64	80	96	112	128

Banks 9 - 16 Issues PC Messages on MIDI Channel 2

Pattern	Bank 9 PC	Bank 10 PC	Bank 11 PC	Bank 12 PC	Bank 13 PC	Bank 14 PC	Bank 15 PC	Bank 16 PC
1	1	17	33	49	65	81	97	113
2	2	18	34	50	66	82	98	114
3	3	19	35	51	67	83	99	115
4	4	20	36	52	68	84	100	116
5	5	21	37	53	69	85	101	117
6	6	22	38	54	70	86	102	118
7	7	23	39	55	71	87	103	119
8	8	24	40	56	72	88	104	120
9	9	25	41	57	73	89	105	121
10	10	26	42	58	74	90	106	122
11	11	27	43	59	75	91	107	123
12	12	28	44	60	76	92	108	124
13	13	29	45	61	77	93	109	125
14	14	30	46	62	78	94	110	126
15	15	31	47	63	79	95	111	127
16	16	32	48	64	80	96	112	128

8 MIDI & WiFi Connectivity

8.15 WiFi Connection

T-1 can connect on WiFi networks which is used exclusively to connect with other gear across Ableton Link. Only 2.4GHz networks are recognised. In addition, T-1 can operate as a WiFi Hotspot allowing other devices to search, find and connect to T-1 as the central WiFi hub in a network of connected devices.

T-1 Hotspot
Example of wireless connected devices

Phone

Wireless Network

Hotspot

Tablet

PC/Mac
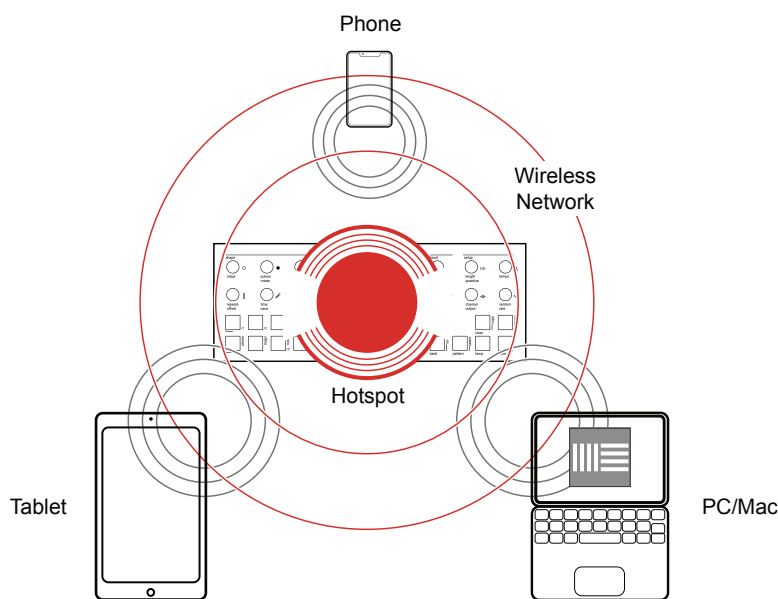
T-1 can be configured as an hotspot enabled device within the Torso T-1 Config app. T-1 then is searchable over its WiFi network. Other devices such as iPad, Macbook, iPhone, and other WiFi compatible audio gear can be connected to the network and can operate in a synchronised way using Ableton Link.

Checked when selected as hotspot

Other networks, filtered as saved or available

Network and password. Set for Hotspot access. Also set to connect to other networks

Hotspot configuration
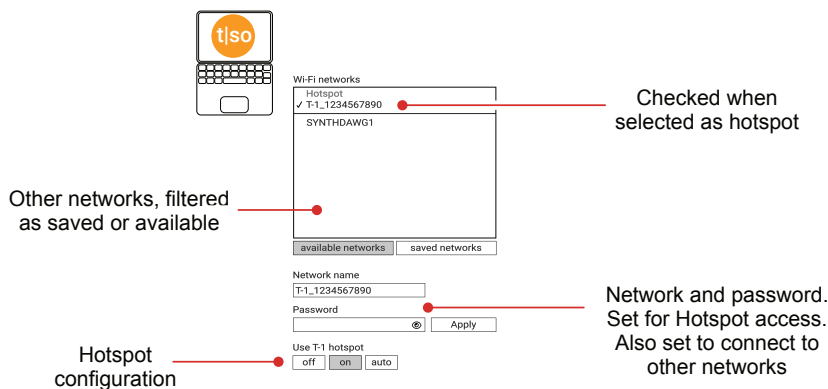
▌ CREATING A WIRELESS HOTSPOT

1. Connect T-1 to the T-1 Config host PC/Mac using the USB connection.

2. Open T-1 Config and select the 'Wi-Fi' Page.

3. Click on the 'Hotspot' named device to set up. This is in the Wi-Fi Networks section, within the available network list. The T-1 Hotspot name will be similar to, T-1_1234567890 but this can be renamed.

4. The selected active hotspot is indicated as checked in the network list.

5. With the hotspot selected, the options to configure will be displayed. Select the configuration option Off, On or Auto. Select On to use T-1 as the WiFi hotspot allowing other device connections. Set to Off to never use as a hotspot. Auto will allow the hotspot to be used when other saved networks are not available.

6. Optionally create a password to improve security and only allow devices to connect using the defined password.

▌ CONNECTING T-1 TO A WIRELESS NETWORK

1. Connect T-1 to the T-1 Config host PC/Mac using the USB connection.

2. Open T-1 Config and select the 'Wi-Fi' Page.

3. Any available networks detected in the vicinity will be listed when displaying the 'available networks' filter.

4. Select the network, enter the password and select 'connect'.

5. Other devices connected to the same network will be able to communicate on Ableton Link.

6. Previously connected networks will be available for future selection from the saved network filtered list. Click the 'X" on a network to forget and disconnect from this connection.

8 MIDI & WiFi Connectivity

8.16 Ableton Link

Ableton Link is a technology developed to keep instruments and devices in sync when connected on the same network. This supports multiple devices operating in time and their transport controlled together. T-1 supports Link and allows interfacing with other link connected gear. These devices must be link enabled and connected on the same network.

Link
Example between Ableton Live & T-1
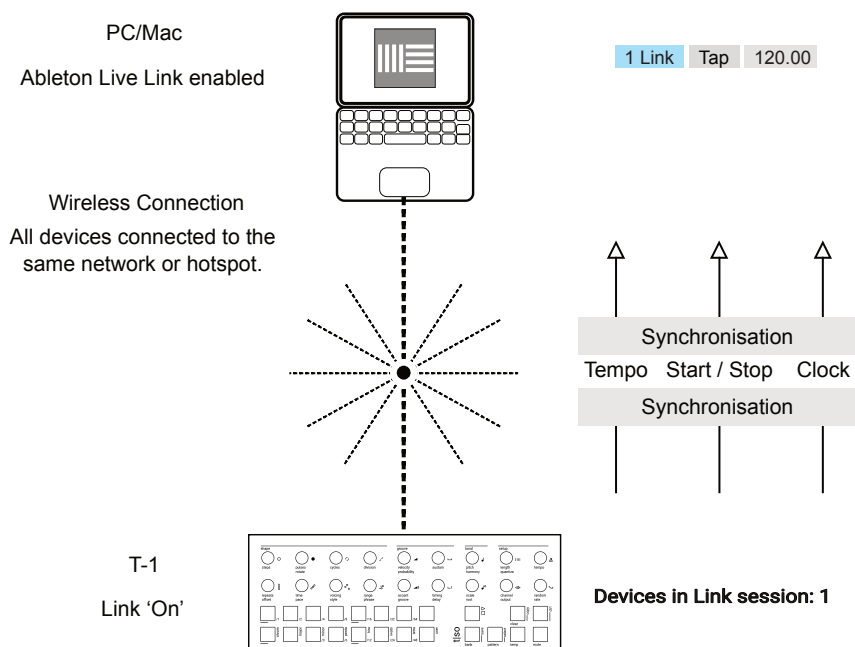
PC/Mac

Ableton Live Link enabled

`1 Link`   `Tap`   `120.00`

Wireless Connection

All devices connected to the same network or hotspot.

Synchronisation

Tempo   Start / Stop   Clock

Synchronisation

T-1

Link 'On'

Devices in Link session: 1

Ensure T-1 is connected to the same network as the other link enabled devices. For example, connect the PC/Mac hosting Ableton Live to the T-1 Hotspot (set to on) or connect both to an available network.

Clock Hierarchy.
When multiple clocks are connected, the hierarchy places the link clock last. The T-1 Clock hierarchy is 1. Analog Clock 2. MIDI Clock 3. Link.

▍ OPENING A WIRELESS LINK SESSION

1. Ensure T-1 is connected to the same network as the other link enabled devices. For example, connect a PC/Mac with Ableton Live to the T-1 Hotspot.

2. Ensure T-1 Config has set the Link settings in the 'Sync' page configured as desired:-

   • Link Synchronisation: On - Automatically connects to link enabled devices recognised on the same network.

   • Start / Stop Sync: On - recognises and acts upon the incoming start / stop commands from other link connected devices.

3. The number of devices connected on the same network is shown in the T1-Config 'Sync' page.

4. The timing and transport features will be synchronised with the connected devices. So tempo can be adjusted centrally.

5. Link devices can control start / stop on devices that are set to allow. T-1 [PLAY] button will pulse ORANGE ■ if a link session is active.

Link

Link Synchronisation	On
Start Stop Sync	On

Devices in Link session: 0

8 MIDI & WiFi Connectivity

8.17 MIDI Application Example - Digital Audio Workstation

MIDI can be connected by the 5 Pin DIN using the Type A adapter or by USB. When used with PC or Mac hosted software tools such as a DAW, the USB option is more common. The PC / Mac can also power the T-1 hardware. This is a simple set up, useful to control software plug-in synth tracks.

Example Configuration: T-1 Controlling an Ableton Live Synth.

Ableton Live Environment

USB

| Link | EXT | 102.00 |

1 Plugin A — Synth Plug-In Assigned

MIDI From
T-1 — MIDI Input from T-1
Ch. 1 — MIDI Channel 1
Monitor
In Auto Off — Auto On to Monitor Input
Audio To
Master — Audio Output to Master Bus

Sends A B

1.53   0
    — 12
1   — 24
S   — 36
    — 48
    — 60

Track Enabled

Ableton Live MIDI Preferences

MIDI Ports	Track	Sync	Remote	MPE
▼ In: T-1	☑	☑	☑	☐
MIDI Clock Sync Delay:	0.00 ms			
Sync Type:	MIDI Clock			
MTC Frame Rate:	All			
MTC Start Offset	00 : 00 : 00 : 00			
▶ Out: T-1	☐	☐	☐	☐

Primary lead is T-1 which controls transport and clock synchronised in the Ableton Live secondary follower.

T-1 Environment

USB   Channel 1

T-1 Config

These are defaults.

MIDI usb

	Notes	Clock	Start / Stop	Prg. Change
In	On	Off	Off	Off
Out	On	On	On	Off

8.18 MIDI Application Example - Desktop Synth Melody

MIDI can be connected to a desktop synth using the 5 Pin DIN and the Type A adapter. When used with a desktop device, the MIDI DIN option is more common. This is a simple set up, useful to control synth melodies and also synths parameters.

Example Configuration: T-1 Controlling Elektron Digitone

Digitone Environment

MIDI In

Track 1 Channel 1

MIDI Config

SYNC:

Clock Receive = On
Transport Receive = On

PORT CONFIG:

Input From = MIDI or MIDI+USB
Receive Notes = On
Receive CC/NRPN = On

System

USB CONFIG

USB Audio/MIDI = On
If using USB Connection

A01   UNTITLED   P:+0   ♩ 120.0

SYN 2

ATK   DEC   SUS   REL

LEV   DRV   PAN   VOL

10   64   70

CC#9   CC#10 CC#7

Primary lead is T-1 which controls transport and clock synchronised in the Digitone secondary follower.

9   10   7

T-1 Environment

MIDI Out

MIDI Adapter from Output

Channel 1

T-1 Config

These are defaults.

MIDI trs

	Notes	Clock	Start / Stop	Prg. Change
In	On	Off	Off	Off
Out	On	On	On	Off

8 MIDI & WiFi Connectivity

8.19 MIDI Application Example - Desktop Synth Presets

Program Change messages allow T-1 to change a preset, pattern or patch on a destination device using MIDI messaging. The behaviour is dependant on the connected device.

Example Configuration: T-1 Controlling Elektron Digitakt

Digitakt Environment

MIDI In

Patterns are changed in Digitakt when a pattern changes in T-1.
Digitakt patterns numbered A01 - H16

MIDI Config

SYNC:

Clock Receive = On
Transport Receive = On

PORT CONFIG:

Input From = MIDI or MIDI+USB
Receive Notes = On
Receive CC/NRPN = On

CHANNELS:

Prog Chg In Ch = 2

System

USB CONFIG

USB Audio/MIDI = On
If used with USB connection

G02 = Bank 15, Pattern 2   G02

G01 = Bank 15, Pattern 1   G01

Primary lead is T-1 which controls transport and clock synchronised in the Digitakt secondary follower.

MIDI Out

Pattern Changes   T-1 Environment

MIDI Adapter from Output

Prog Change on Channel 1 and 2

T-1 Config

Prg. Change set to On. Others are set as defaults.

MIDI trs

	Notes	Clock	Start / Stop	Prg. Change
In	On	Off	Off	Off
Out	On	On	On	On

8.20 MIDI Application Example - iPad Audio

Mobile music applications and especially on iOS platforms is a growing area of music production and has now reached a professional level. Several Hosting apps allow audio apps and plugins configuration as well as managing the interface with hardware.

Example iPad Overview: T-1 Controlling iOS Apps via AUM

AUM
As the host Audio / MIDI
Mixer and hub.

Audiokit Retro Piano
Plug-in Audio instrument

MSXII Fly Tape
Plug-in effect in the audio chain

Audio Channel

SPKR

1: Retro Piano

iPad / iPhone
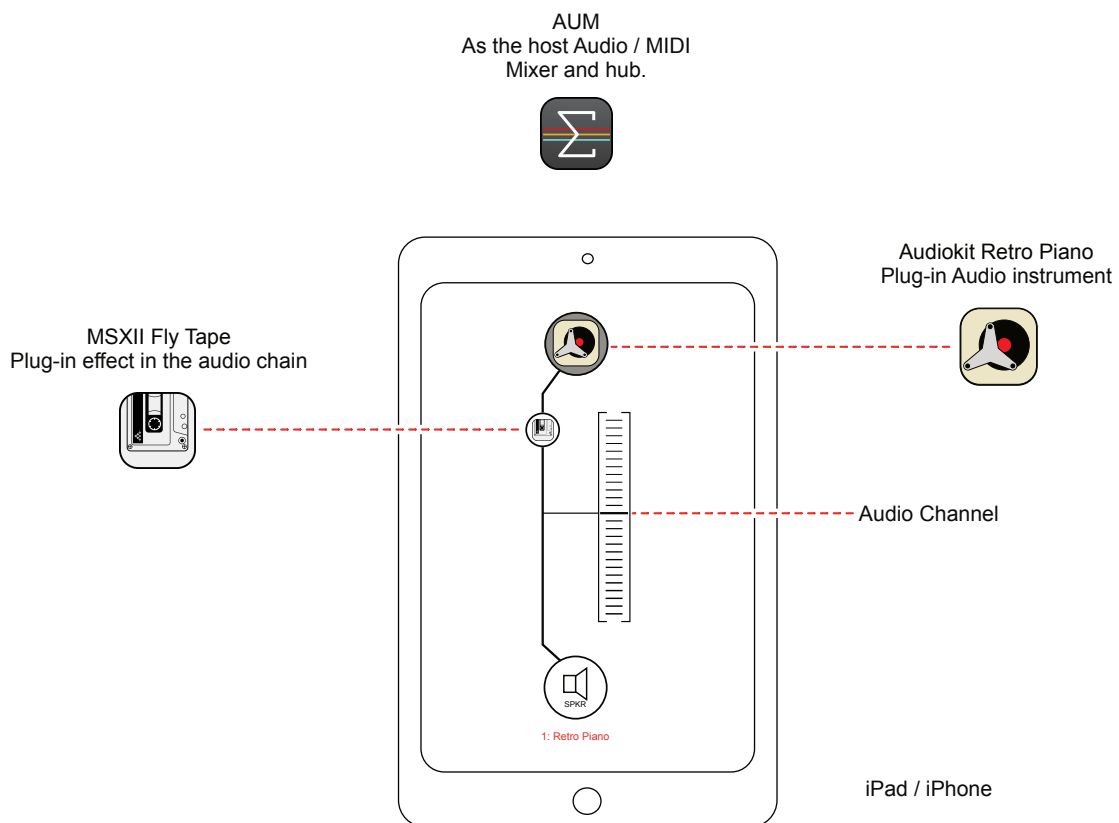
Connection to iPad can be direct from USB-C MIDI or via a MIDI interface. Power will need to be supplied to T-1 but this is possible from most modern iPads.

T-1 should be set as the MIDI control input and routed to the instrument app within AUM.

AUM does not inherently allow MIDI sync, transport and tempo control from an external device. This should be controlled using Ableton Link which is a feature provided in AUM.

The iPad has a single USB input / output and often it is useful to connect via an Audio / MIDI interface. The advantages are that this will power the T-1 as well as allowing an audio output connected. A direct USB connection to T-1 is also possible.

Example Configuration: T-1 Controlling AUM hosted on iPad

iPad / AUM Environment

T-1 to play the hosted instrument on the iPad. Other apps such as effects can also be controlled by notes and CC. Transport control via Ableton Live.

MIDI In

Interface Environment

Optionally connect USB direct

iPad compatible interface for connecting both Audio and MIDI is an option. This example uses the IK Multimedia iRig Pro I/O, a single channel iPad compatible interface

Additional Audio
Option i.e. Synth

Stereo Out

T-1 Environment

MIDI Adapter from Output

MIDI Out

Channel 1

T-1 Config

Defaults are shown. USB can also be used.

MIDI trs

	Notes	Clock	Start / Stop	Prg. Change
In	On	Off	Off	Off
Out	On	On	On	Off

8.21 MIDI Application Example - External Controller

An external MIDI controller can be connected to T-1 to allow live play out of MIDI chords and notes. MIDI controllers such as a keyboard, drum pads, sequencer are also options that can be connected.

Example Configuration: T-1 with External MIDI Controller

Microkorg Environment

MIDI In

Example with Microkorg as secondary follower. The T-1 can send sequence MIDI information or notes / sequencing from the external controller input can be retransmitted from T-1.

Keystep Environment

MIDI Out

Controller notes can be transmitted 'thru' T-1 to a destination synth or use an FX track in T-1 to process incoming MIDI before generating an output. Also the external controller can control transport and clock.

T-1 Environment

MIDI Out   MIDI In

MIDI Adapter for Input / Output

Channel 1

T-1 Config

MIDI trs

	Notes	Clock	Start / Stop	Prg. Change
In	On	On	On	Off
Out	On	On	On	Off

9

Analog Connectivity

As already stated, T-1 is a sequencer which relies on it's connected devices to develop evolving and generative musical productions. MIDI is a common protocol for connecting desktop devices. For modular systems and classic equipment analog connectivity solutions are needed. The most common modular format is Eurorack which uses control voltages, triggers and analog clocks. T-1 has the ability to connect to analog gear and a variety of configuration options ensure most applications can be covered. Analog signals are patched using single cables for each function, typically with a 3.5mm mini jack format. T-1 has analog connectivity built in and accessed using 3.5mm mini jack inputs and outputs for gates, control voltages, synchronisation of clock and reset. An individual control voltage input is also available to access several T-1 internal functions. The application of analog connectivity expands T-1

greatly with the ability to connect to various devices It can control modular systems where synth voices or effects in a Eurorack system are controlled and sequenced. It can control desktop classic analog synthesizers. Setting the correct configuration and understanding the other devices in the setup is important. It is normal practice to have devices connected while composing patterns. There are some default configurations that help to get started and are good foundations to adjust settings. The configuration is changed using the T-1 config tool and remember that CV and Gates are linked to the assigned MIDI channel in T-1. As with MIDI connected devices, getting the right sound by adjusting the synth parameters, settings and sound is a prerequisite but these adjustments are also part of the ongoing sound design process.

9 Analog Connectivity

9.1 General Trig & CV Concepts

Analog control with audio gear is typically based on a voltage signal. There are several applications of voltage control depending on manufacturer preference and standards. In Eurorack, the most common modular format, a 0-5V signal is usually used for triggering events i.e. Note, On, Off and for modulation, pitch and velocity. Other Voltage ranges of -5V to +5V bi-polar, 0-8V or 0-10V can also be found in Eurorack format.

Trigger & Gate

A trigger is a short pulse that activates an event. Typically a note is activated by a trigger. In T-1 Triggers have a 0-5V range although most gear will recognise the switch is triggered below the 5V threshold. Formats may differ in whether the increase voltage from 0 to 5V triggers an event or whether the trigger operates on a falling edge 5V to 0. These are V-Trig and S-Trig formats respectively. A trigger differs from a gate in that it consists of shorter pulses. A gate would normally be controlled to be held high or low for longer periods.

T-1 triggers are 0-5V although the input voltage tolerance is up to 10V.

Control Voltage

Control Voltage or CV is used to control absolute or relative values. A typical application is to control Pitch of an oscillator. The most common format being 1V / Octave although Hz/Volt is an alternative. A trigger would activate a note and the note value set by CV. Other modulation destinations such as affecting parameters for effects and modules are also controlled by CV. T-1 CV can also be configured as gates.

T-1 operates with a 0-5V CV range.

Clock

A clock is used to synchronise timing between devices. Pulses are generated typically by a nominated primary lead and other secondary devices will synchronise to this clock. The format is based on PPQN - Pulses per Quarter Note with 24PPQN being most common. Other options are available but the most important consideration is to match up the clock with devices in the configuration. A reset is also available in T-1.
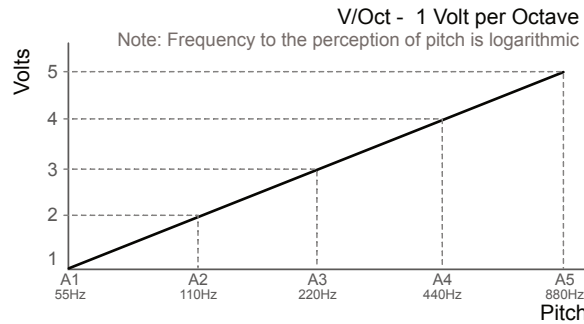
T-1 Clock Hierarchy - 1. Analog Clock 2. MIDI Clock 3. Link

T-1 has clock 2, 4, 8, 12, 16, 24 PPQN Options. Reset level 5V.

Example CV Concepts and Applications.
Diagrams and values for Illustrative purposes only. Actual behaviour will be based on specific devices.

V/Oct - 1 Volt per Octave
Note: Frequency to the perception of pitch is logarithmic

Volts

5
4
3
2
1

A1   A2   A3   A4   A5
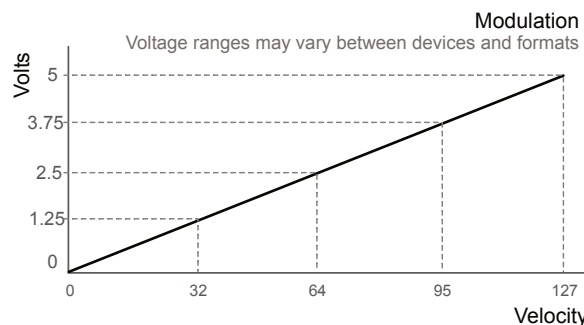55Hz   110Hz   220Hz   440Hz   880Hz

Pitch

Pitch
Volts per Octave is a common approach to controlling pitch of an analog device, especially in Eurorack. Occasionally this may also follow an alternative Hz / Volt format, used by Korg and Yamaha.

Trigger

Volts

+5

V-Trig
0 to +5V

S-Trig
+5V to 0V

0

Time
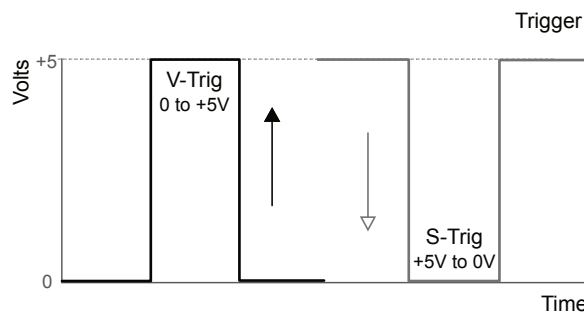
Trig
A trigger is a short voltage pulse that activates an event. A gate is similar but usually a longer, controlled length. A trigger is often used for note on, off and switch functions. V-Trig is the most common, 0-5 rise to trigger. S-Trig activates on a falling 5-0 voltage level.

Clock

Volts

+5

0

Time
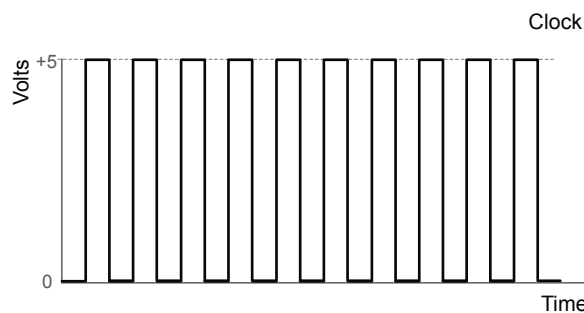
Clock
An analog clock operates on a series of pulses to synchronise devices. Pulses are normally measured Pulses per Quarter Note - PPQN. T-1 has adjustable settings for analog clock rates and pulse width to help match up to devices. Analog clock is the highest order in the clock hierarchy.

Modulation
Voltage ranges may vary between devices and formats

Volts

5
3.75
2.5
1.25
0

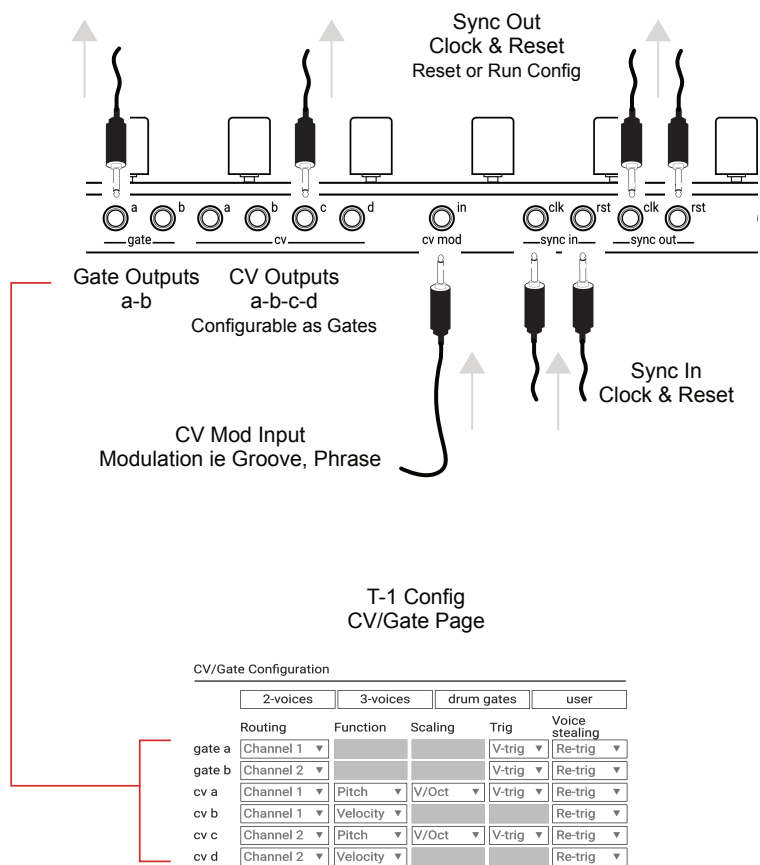0   32   64   95   127

Velocity

Range
Control Voltages can also modulate various parameters. These may be % ranges, absolute values, offsets etc. T-1 has a configuration option for velocity. While this is based on the velocity of notes it can be used to modulate any analog parameter.

9 Analog Connectivity

9.2 Analog Hardware Connections

The rear of T-1 is the location for the input / output connections for external gear. These operate as the physical interface between other hardware devices and can be configured within the T-1 Config utility.

Sync Out
Clock & Reset
Reset or Run Config

Gate Outputs
a-b

CV Outputs
a-b-c-d
Configurable as Gates

Sync In
Clock & Reset

CV Mod Input
Modulation ie Groove, Phrase

T-1 Config
CV/Gate Page

CV/Gate Configuration

	2-voices	3-voices	drum gates	user	
	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▼			V-trig ▼	Re-trig ▼
gate b	Channel 2 ▼			V-trig ▼	Re-trig ▼
cv a	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv b	Channel 1 ▼	Velocity ▼			Re-trig ▼
cv c	Channel 2 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv d	Channel 2 ▼	Velocity ▼			Re-trig ▼

The CV and Gate outputs are configurable in the CV/Gate page of the T-1 Config tool. The Outputs are linked to MIDI Channels. Whatever is sent to MIDI (CHANNEL) set on the T-1 hardware will also be output as assigned for the specific CV and Gate.

Pitch out at 0V is calibrated to C3

9.3 CV & Gate Output Configurations

The CV and Gate outputs are configurable within the T-1 Config tool. Once set these may not need further changes, however this will also depend on the connected devices and set up. There are 4 preset configurations available in the T-1 Config Tool as a starting point. Note that CV can be configured as gates, but gates cannot be configured as CV.

Example 3-Voice Configuration
T1 Config Tool - CV/Gate Page

CV/Gate Configuration

	2-voices	3-voices	drum gates	user

	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▼			V-trig ▼	Re-trig ▼
gate b	Channel 2 ▼			V-trig ▼	Re-trig ▼
cv a	Channel 3 ▼	Gate ▼		V-trig ▼	Re-trig ▼
cv b	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv c	Channel 2 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv d	Channel 3 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
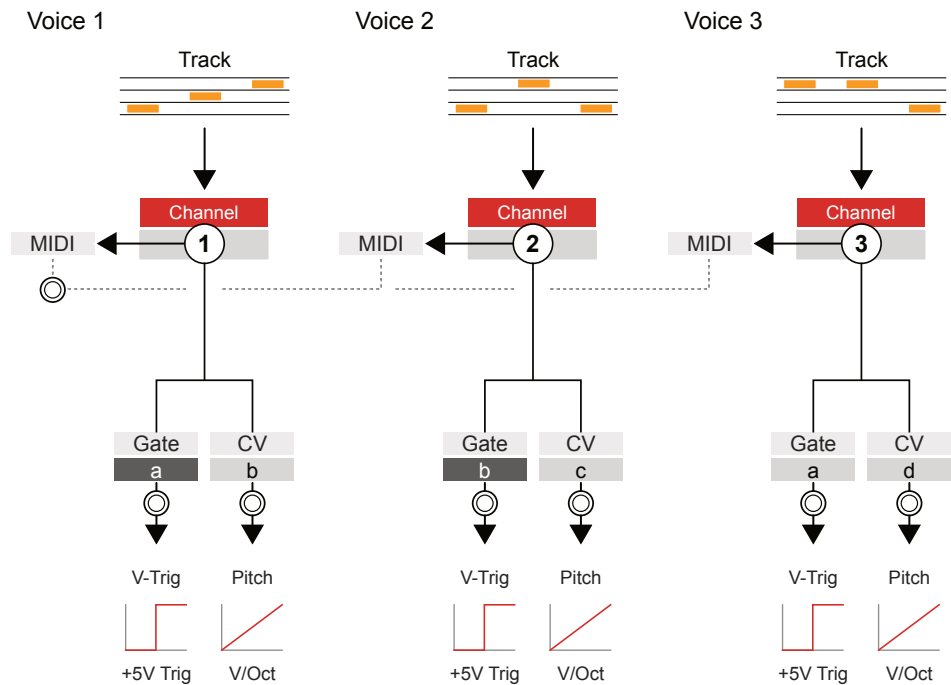
|	
a	Gate Output a or b
b	CV Output a, b, c or d. Voice 3 has CV a configured as gate
Re-Trig	New notes always steal voice

9 Analog Connectivity

9.4 CV Mod Input

The CV Modulation input allows an external analog signal input to be used to control several parameters within T-1. The input is expected to be a range of 0-5V although the physical input is tolerant of voltages of up to 10V. This can be practically applied using an external LFO, Envelope, sequencer or other CV source to generate a shape for controlling the T-1 parameters such as groove and phrase.

Example CV Mod Input
Groove & Phrase Options
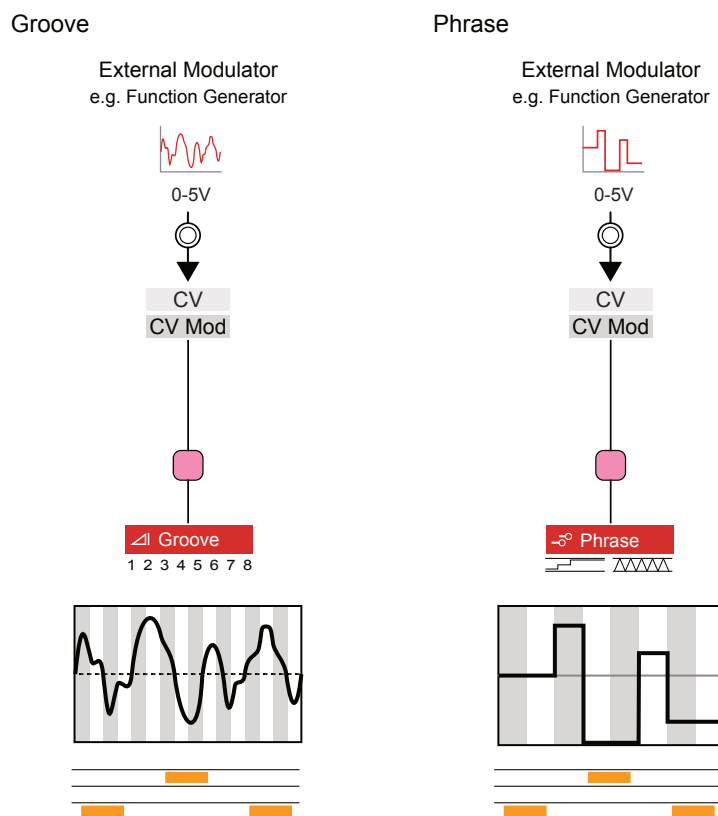
The CV Inputs of the Groove and Phrase functions allow an external input to generate a user groove template and custom cadence template respectively. The CV In option should be selected in each of these functions and an external CV modulation source connected.

Try creating a CV sequence on a track and patching a CV Output back into the CV Mod input. User profiles can be created inside the T-1 on a track and then applied as a user CV profile to the Groove & Phrase of any track using this loopback tip.

9.5 Analog Synchronisation

The Analog synchronisation options can be edited in the T-1 Config tool. These are based on the analog clock settings. The analog clock is the highest function in the clock hierarchy, followed by MIDI than Link comes last. If multiple clocks are connected to T-1 the hierarchy dictates the primary lead clock used.

Clock Sync Hierarchy
T1 System

1 Analog Clock
Sync In - Clk

2 MIDI Clock
MIDI In

3 Link
Ableton Link WiFi

Analog Clock Sync
Rate & Pulse width

Analog Clock

|	Rate	Pulse width
Out	24 PPQN ▼	50%
In	24 PPQN ▼	

The rate should be matched to the external device. The speed of the sequences may be out of synchronisation i.e. Tempo if the clock rate is not matched. Try different settings to synchronise but check manufacturers documentation first. The pulse width can be set between 15% and 85%. The default of 50% should be ok for most circumstances but this can be adjusted if there are issues recognising the clock from other devices.
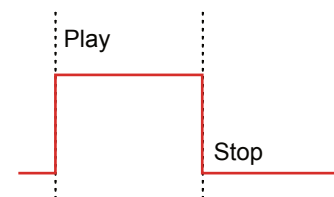
Analog Reset

Out	reset	run
In	reset	run

The input and output labelled sync in and sync out 'rst' has two behavioural options to select from:-

Reset:
Will trigger a reset pulse when the pattern starts. This is default state.
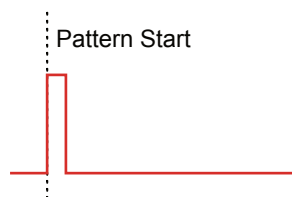
Run:
Gate signal. Gate high when T-1 is playing. Gate low when stopped.

Pattern Start

Play

Stop

9 Analog Connectivity

9.6 Latency

Latency is a side effect which occurs when connecting devices together whether by analog means, MIDI or Link. Clock signals or triggers are sent at one point in time and received by the other device at another point in time. This may be extremely short and In most cases there is little or no noticeable effect. However, some errors, even at a milli second level, may be an issue.

Most devices therefore have a latency compensation model where parameters can be adjusted to offset the clock to help deal with this. T-1 also has a latency compensation feature.

| Latency	
Clock Latency	0.0ms

Latency is usually managed on a trial and error basis as there is no absolutely accurate process or formula. It can be very difficult to ascertain the ms error with connecting gear. If there are noticeable errors then the clock latency can be adjusted incrementally. The available range is -200ms to 200ms but it is advised to always start with the default of 0.0ms.

9.7 Analog Application Example - T-1 Primary Clock

T-1 can operate as the primary clock device in a setup where other devices will follow. This is a common configuration. Matching up the clock pulses and run signals is important to ensure the right tempo synchronisation. Analog synchronisation options can be edited in the T-1 Config tool.

Example Configuration: T-1 with ALM Pam's New Workout - PNW Eurorack Module

Eurorack + PNW Environment
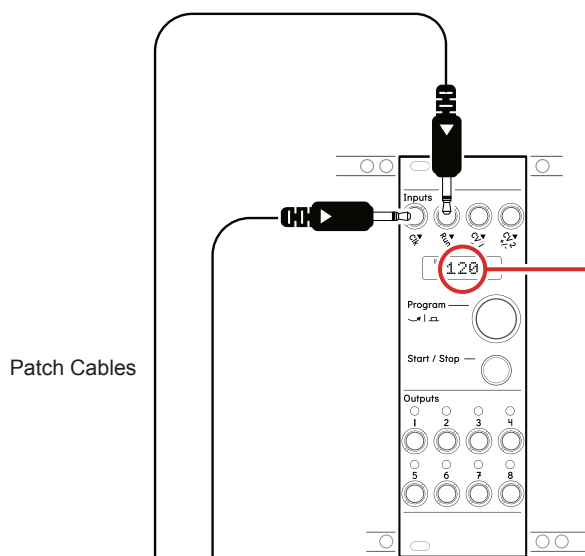
Tempo will follow T-1

Pam's New Workout default key settings:

- PPQN = 24 - Matches T-1

- Run? = Set to Y, i.e. Yes. To allow a run input rather than automatic start on sensing a clock signal. This is a more accurate configuration. T-1 Run set to give a gate high for play and low for stop.

Patch Cables

Pam's New Workout synchronised as the secondary follower to T-1 as the primary clock. Any connected devices to PNW will be synchronised.

T-1 Environment

T-1 as the primary clock. Any connected devices, i.e PNW will be synchronised.
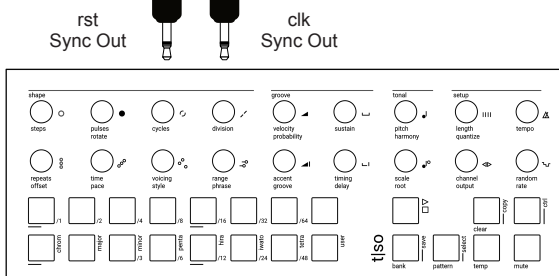
rst
Sync Out

clk
Sync Out

Analog Clock

	Rate	Pulse width
Out	24 PPQN ▼	50%
In	24 PPQN ▼	

Analog Reset

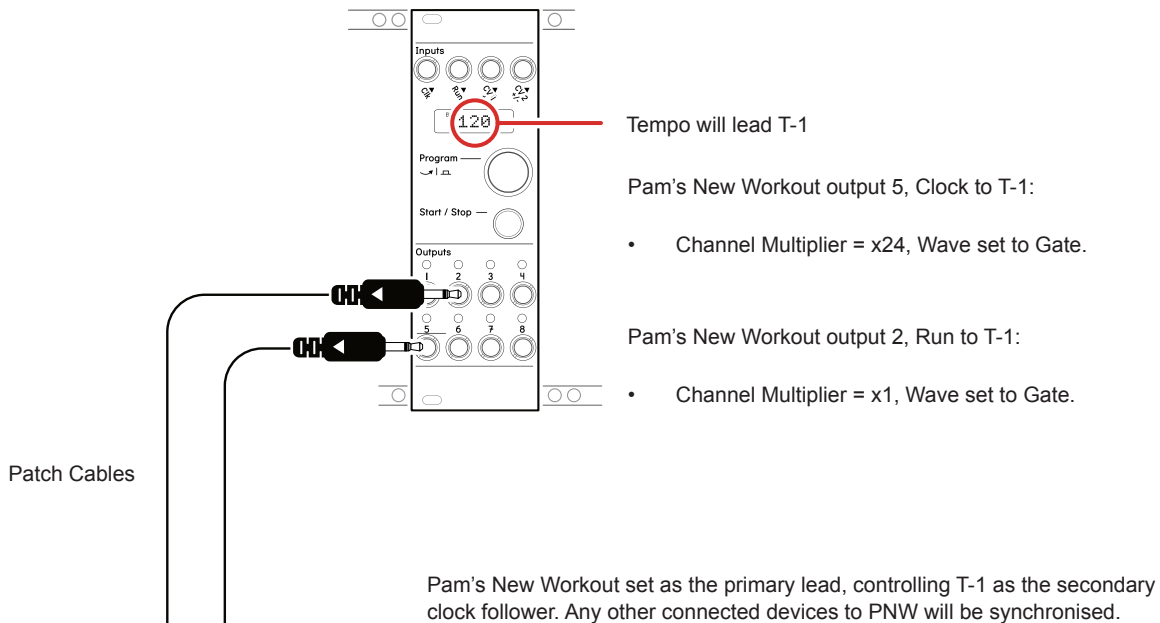|		
Out	reset	run
In	reset	run

9 Analog Connectivity

9.8 Analog Application Example - T-1 Secondary Clock Follower

T-1 can also operate as the secondary follower of a clock which is under another devices primary control. This is a less common configuration. Matching up the clock pulses and run signals is important to ensure the right tempo synchronisation. Analog synchronisation options can be edited in the T-1 Config tool.
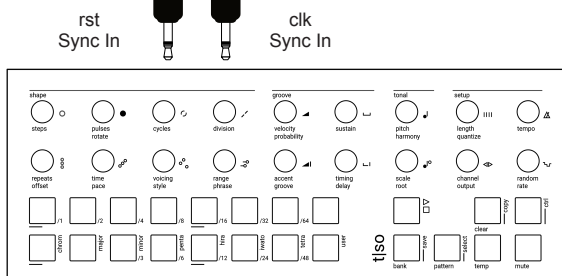
Example Configuration: T-1 with ALM Pam's New Workout - PNW Eurorack Module

Eurorack + PNW Environment

Tempo will lead T-1

Pam's New Workout output 5, Clock to T-1:

- Channel Multiplier = x24, Wave set to Gate.

Pam's New Workout output 2, Run to T-1:

- Channel Multiplier = x1, Wave set to Gate.

Patch Cables

Pam's New Workout set as the primary lead, controlling T-1 as the secondary clock follower. Any other connected devices to PNW will be synchronised.

T-1 Environment

T-1 as the secondary follower synchronised to PNW.

rst
Sync In

clk
Sync In

Analog Clock

	Rate	Pulse width
Out	24 PPQN ▼	50%
In	24 PPQN ▼	

Analog Reset

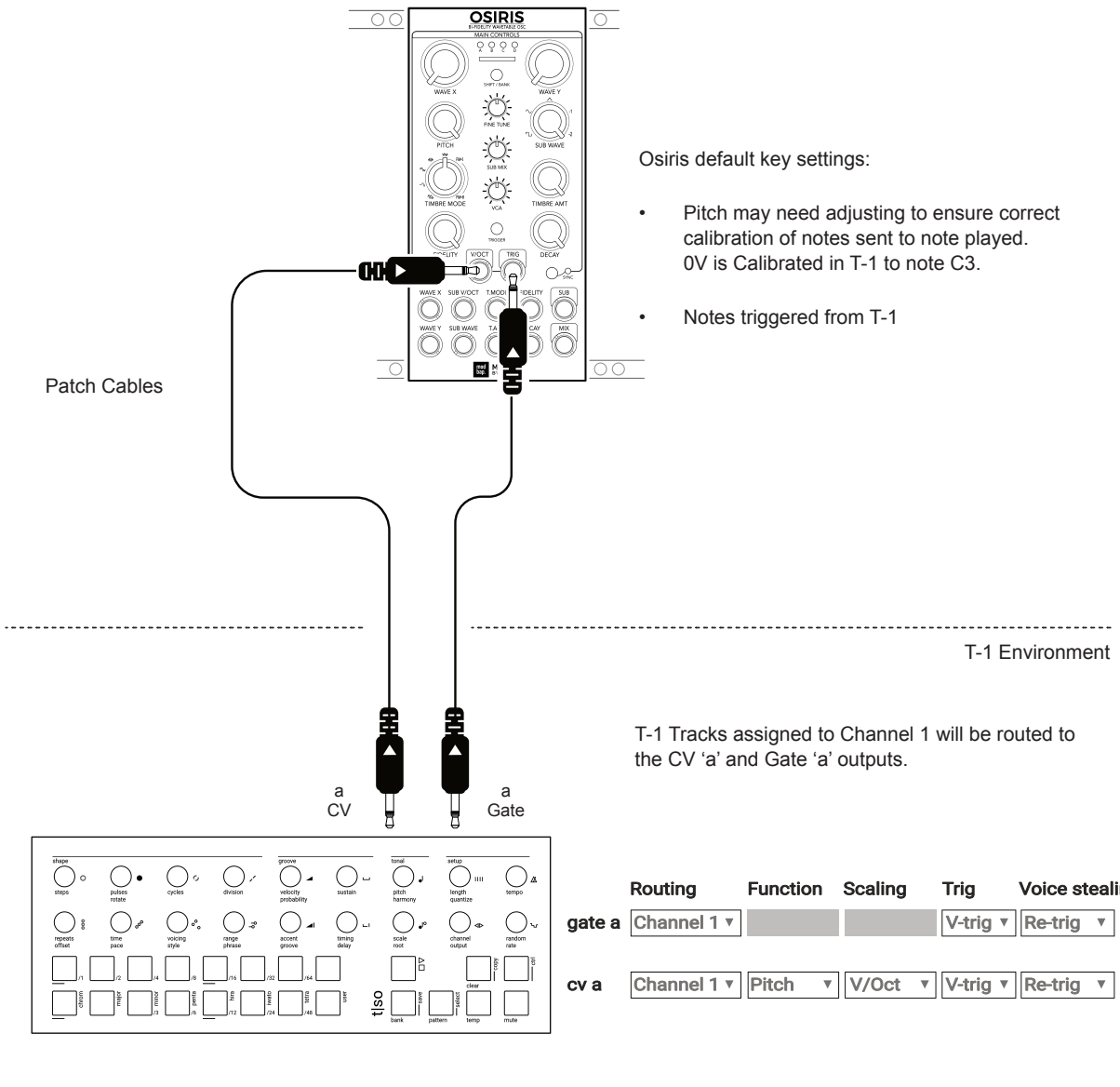|		
Out	reset	run
In	reset	run

9.9 Analog Application Example - T-1 Controlling a Synth Voice

Synth voice control at a minimum consists of triggering a note on/off and setting the note pitch. Other parameters such as velocity modulation may also exist. External gear pitch may need tuning to ensure a transmitted note value at the destination device matches the desired note.

Example Configuration: T-1 with Modbap Modular's Osiris Eurorack Module

Eurorack + Osiris Environment

Osiris is a wavetable synth module with a single WT voice plus a sub wave underlying the main. This example controls the main WT voice.

Osiris default key settings:

- Pitch may need adjusting to ensure correct calibration of notes sent to note played. 0V is Calibrated in T-1 to note C3.

- Notes triggered from T-1

Patch Cables

T-1 Environment

T-1 Tracks assigned to Channel 1 will be routed to the CV 'a' and Gate 'a' outputs.

a
CV

a
Gate

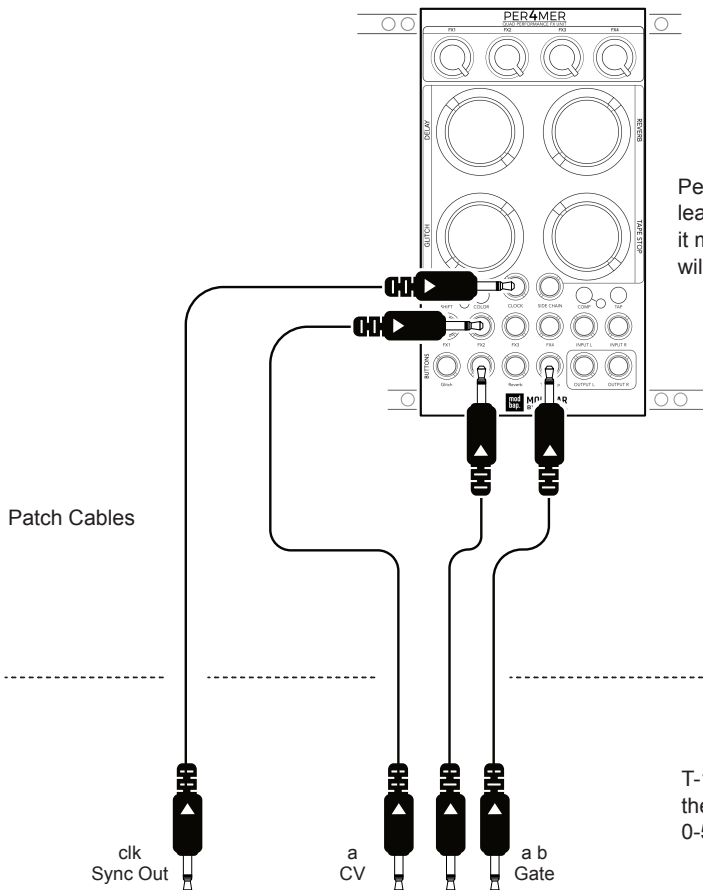|	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▾			V-trig ▾	Re-trig ▾
cv a	Channel 1 ▾	Pitch ▾	V/Oct ▾	V-trig ▾	Re-trig ▾

9.10 Analog Application Example - T-1 Controlling an Effect

While Pitch and Gates can control a synth voice, the CV output can also be used to modulate various parameters. The configuration is stated in T-1 Config as velocity and as such the velocity values in T-1 will be used as the modulation source.

Example Configuration: T-1 with Modbap Modular's Per4mer Eurorack Module

Eurorack + Per4mer Environment

Per4mer is a quad effect which triggers glitch, delay, reverb and tape stop along with modulation inputs for effect parameters.

Per4mer also has clock synchronised from T-1 as primary lead. As the effect being modulated is time based i.e. delay, it makes sense to synchronise the clock. T-1 Velocity 0-127 will modulate the delay parameter 0-100%.

Patch Cables

T-1 Environment

T-1 Tracks assigned to Channel 1 and 2 will trigger the Per4mer effects on/off. Channel 3 will send a CV 0-5V output on CV 'a' relative to the 0-127 velocity
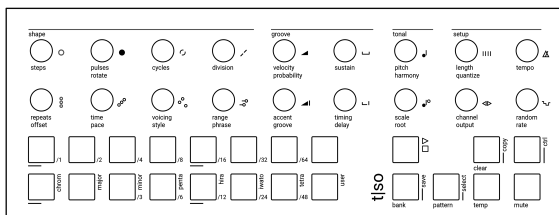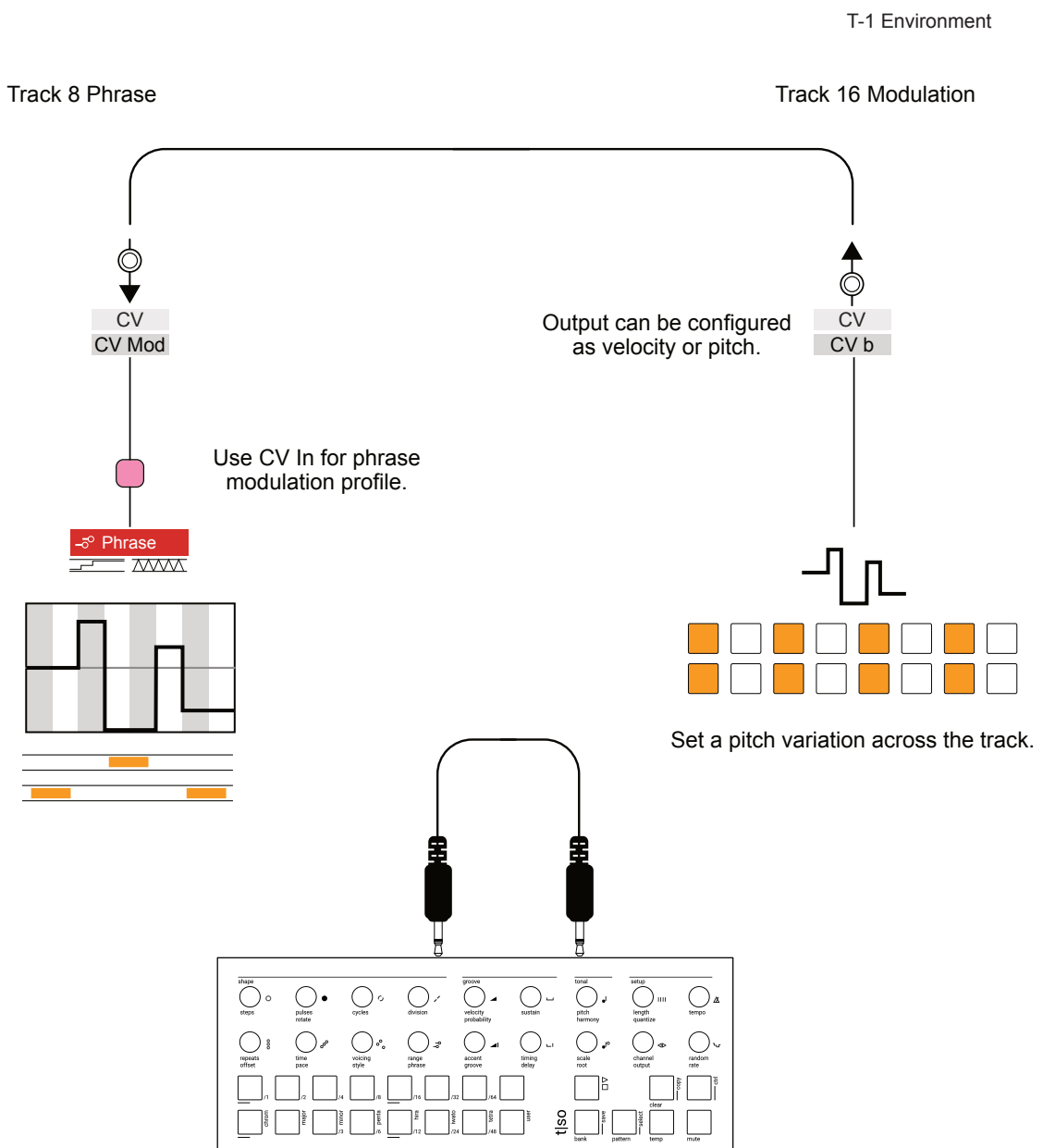
clk
Sync Out

a
CV

a b
Gate

	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▾			V-trig ▾	Re-trig ▾
gate b	Channel 2 ▾			V-trig ▾	Re-trig ▾
cv a	Channel 3 ▾	Velocity ▾			Re-trig ▾

9.11 CV Loopback

CV can be transmitted out of T-1 to control external gear. A useful tip is to create a CV loopback by connecting a CV output back into the CV Mod input. This allows the creation of modulation tracks than can then be used on the groove and phrase CV control.

Example Configuration: T-1 with CV Loopback for Phrase control

T-1 Environment

Track 8 Phrase

Track 16 Modulation

CV
CV Mod

Output can be configured
as velocity or pitch.

CV
CV b

Use CV In for phrase
modulation profile.

Phrase

Set a pitch variation across the track.

10

System Configuration

A number of under the hood settings that control global or system specific functions exist in T-1. These settings allow selection of options for user experience, general settings and connectivity configurations. As with all connected applications, It is important when configuring the input and output connectivity settings to apply these correctly to match the destination device. Often once set many of these parameter settings can be left alone. The out of the box configurations are generally ok for many applications, especially as a starting point. Alternate settings are also possible when the need arises. Torso Electronics have developed a free configuration tool and utility for accessing and editing T-1's settings. The 'T-1 Config' tool can be downloaded from the Torso Electronics website, located in the resources section of the site. T-1 Config versions are available which are compatible with Intel and M1 Mac's and Windows PC's.
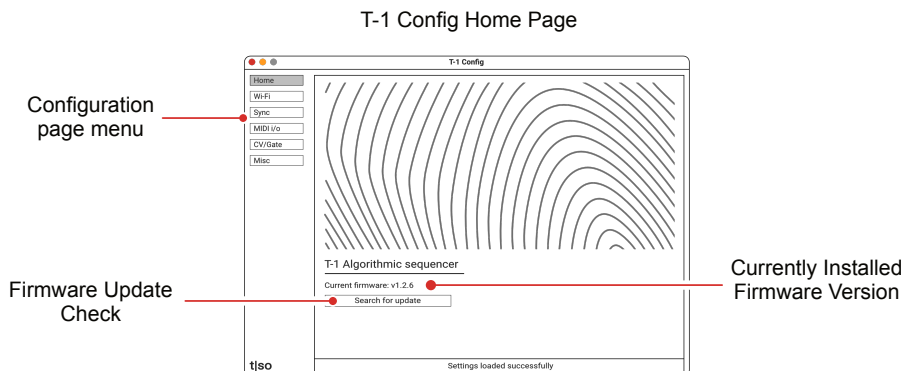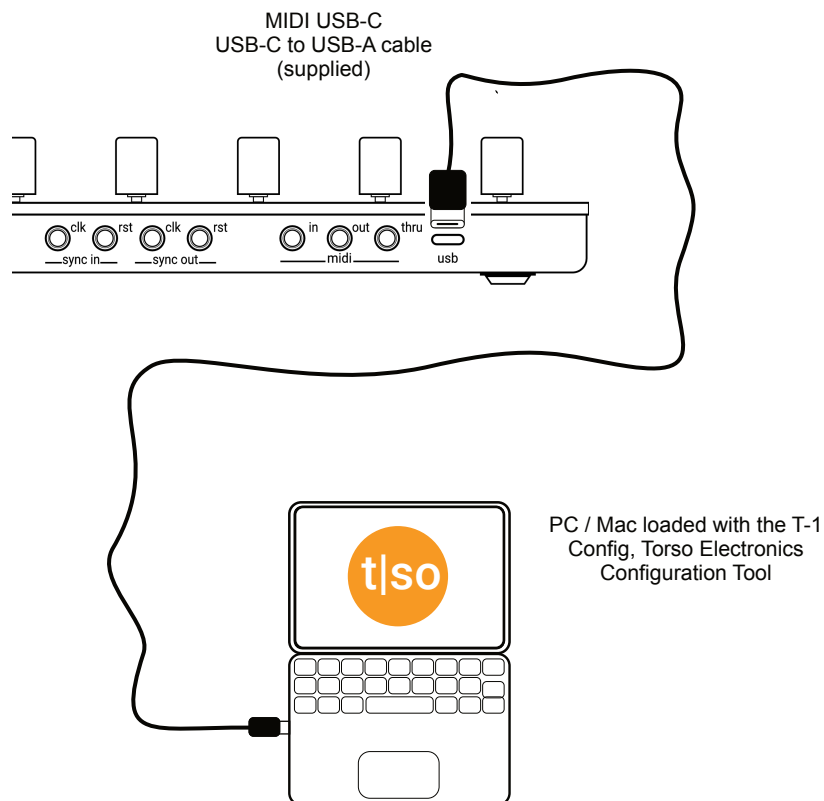
The PC/Mac hosting T-1 Config is then connected to the T-1 sequencer using the USB connection and cable. This book shows illustrations and instructions based on a Macbook view but these will be similar for PC based applications. T-1 Config is essential when setting up the MIDI and Analog input and output settings. The specific details of which will be covered in the respective sections. Guidance on firmware updates is also covered in this section. This chapter therefore gives an overview of the config pages and parameters. In depth application, use of connectivity options and synchronisation is explained in the relevant sections. This section therefore concludes the coverage of T-1 sequencer.

10 System Configuration

10.1 Accessing the Configuration Settings

A PC or Mac should be connected to T-1 using the USB connection, which will also power up the T-1. The Torso Electronics - T-1 Config must be downloaded and installed on the PC / Mac. Illustrations shown are based on the Mac pages. PC pages are very similar. Click the menu option top left to access the relevant configuration page.

MIDI USB-C
USB-C to USB-A cable
(supplied)

PC / Mac loaded with the T-1 Config, Torso Electronics Configuration Tool

T-1 Config Home Page

Configuration page menu

Firmware Update Check

T-1 Algorithmic sequencer

Current firmware: v1.2.6

Search for update

Currently Installed Firmware Version

Settings loaded successfully

10.2 Firmware Update

A Firmware update is performed within the T-1 Config tool when connected to a T-1 sequencer. The current Firmware is displayed on the 'Home' Page.

▌ AUTOMATIC UPDATING OF FIRMWARE

1. Connect T-1 to a PC or Mac hosting the T-1 Config tool using the USB cable and connections.

2. Remove all other connections such as MIDI, CV etc. Only the USB should be connected.

3. Open the Torso 'T-1 Config' Tool.

4. The T-1 Config will automatically search for available updates and if found will prompt to update.

5. Do not unplug or power down during firmware update.

6. Firmware will complete and the T-1 will restart ready for use.

7. Current firmware installed on the connected T-1 device is displayed under the 'T-1 Algorithmic sequencer' title.

8. Mouse Click the 'Search for Update' button if required to perform a manual check.

9. A pop-up will display that the firmware is up to date or will identify the latest firmware and prompt to install.

t|so

Your T-1 is up to date

OK

10 System Configuration

The automatic firmware update method is the primary option when updating the T-1. However there may be some circumstances that a manual update is required. This process details manual updates.

MANUAL UPDATING OF FIRMWARE

1. Connect T-1 to a PC or Mac hosting the T-1 Config tool using the USB cable and connections.

2. Remove all other connections such as MIDI, CV etc. Only the USB should be connected.

3. Open the Torso 'T-1 Config' Tool.

4. Select from the T-1 Config Header Menu, 'Tools' > 'Upload Firmware' > 'Factory Version'.

5. Do not unplug or power down during firmware update.

6. The port will be automatically connected but if not the manual option will be presented. Names on the lines of:-

    •   MacOS - 'dev/tty.usbmodemXXXXX'.

    •   Windows - 'Comxx' - use baud rate 115200 or 460800?":|{}=The latest firmware will be uploaded to the T-1 which will take about 2 minutes. T1- will restart ready for use.

10.3 User Interface Options

A number of user experience options are configurable. This includes brightness, CTRL button behaviour and the ability to change the default knob turn visualisation. These can easily be edited using the T-1 Config tool in the 'Misc' page options when USB connected from a PC/Mac to the T-1.

▌ ADJUSTING BUTTON BRIGHTNESS

1. Open the Torso 'T-1 Config' Tool. Open the 'Misc' page by mouse clicking in the top left menu options.

2. Use Mouse Click and hold to drag the 'LED Brightness' slider setting.

3. The range is 0-100% for the RBG button brightness and can be set to a user preference. Default is 75%. The setting will be stored in T-1.

4. Brightness change can also be performed on the hardware. Hold **[CTRL]** + Turn **(TEMPO)** to adjust the brightness.

▌ CHANGING CTRL BUTTON BEHAVIOUR

1. Open the Torso 'T-1 Config' Tool. Open the 'Misc' page by mouse clicking in the top left menu options.

2. Mouse Click the button to toggle 'Hold [CTRL] on Double Tap'.

    •   The 'ON' position will allow double tapping of the **[CTRL]** button to lock its status to on.

    •   The 'OFF' position is default and will always need **[CTRL]** to be held when accessing secondary functions.

▌ CHANGING PARAMETER KNOB QUICK VIEW

1. Open the Torso 'T-1 Config' Tool. Open the 'Misc' page by mouse clicking in the top left menu options.

2. Mouse Click the button to toggle 'Quick View'.

    •   The 'ON' position will allow the value buttons to be temporarily displayed with the status setting when a knob is turned.

    •   The 'OFF' position will not display the value buttons when turning a **(Knob)**. Using Press & Turn **(Knob)** will visualise the button state.
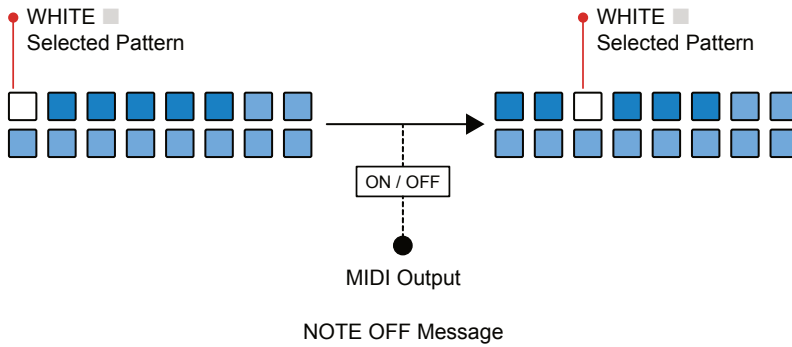
10 System Configuration

10.4 Pattern Choke Options

The behaviour on how the MIDI messages controlling audio is managed on pattern changes or when stop command is issued can be changed within the configuration settings.

Choke on Pattern Change

WHITE
Selected Pattern

WHITE
Selected Pattern

ON / OFF

MIDI Output

NOTE OFF Message

A MIDI Note off message is sent immediately when a pattern changes to choke the audio playing. This will be off in the default settings. Note that the behaviour of the connected device will also determine how audio is played.

Choke on Stop

STOP
Stop Pattern

WHITE
Selected Pattern

ON / OFF

MIDI Output
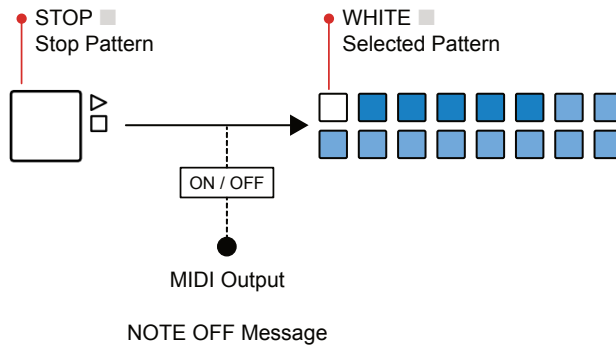
NOTE OFF Message

A MIDI Note off message is sent immediately when a pattern is stopped to choke the audio playing. This will be off in the default settings. Note that the behaviour of the connected device will also determine how audio is played.

MIDI Notes

Not Choked

Choked
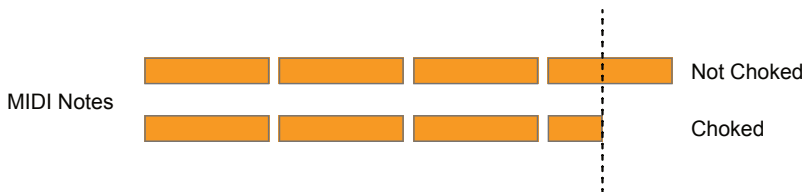
10.5 T-1 Config Menu

The T-1 Config tool has a number of pages which carry configuration settings that can be edited. In addition T-1 Config has a number of utilities and tools than are available in the header menu. Illustrations based on the Mac OS version.

T1 Config - Menu

 T-1 Config   File   Edit   Tools   View   Help

|	Menu	Sub-Menu	Description
1	T-1 Config	About T-1 Config	Displays T-1 Config software version. Also link to request support email.
2	T-1 Config	Services	OS services options
3	T-1 Config	Hide T-1 Config	Hides the T-1 Config windows from display.
4	T-1 Config	Notifies of Status	Hides all but the T-1 Config window from display.
5	T-1 Config	Show All	Restores all hidden windows to be displayed
6	T1- Config	Quit T-1 Config	Close the T-1 Config app.
7	File	Create Backup	Allows a T-1 Backup of settings on a PC/Mac.
8	File	Restore From Backup	Allows a T-1 Restore of settings from a PC/Mac
9	File	Quit T-1 Config	Close the T-1 Config app.
10	Edit	Undo	Standard OS Undo function
11	Edit	Redo	Standard OS Redo function
12	Edit	Cut	Standard OS Cut function
13	Edit	Copy	Standard OS Copy function
14	Edit	Paste	Standard OS Paste function
15	Edit	Paste and Match Style	Standard OS Paste & Match function
16	Edit	Delete	Standard OS Delete function
17	Edit	Select All	Standard OS Select All function
18	Edit	Speech	Standard OS Speech function
19	Edit	Start Dictation	Standard OS Dictation function
20	Edit	Emoji & Symbols	Standard OS Emoji / Symbol function
21	Tools	Download Firmware	Allows selection of a legacy firmware to install
22	Tools	Upload Firmware	Allows installation of alternate firmware e.g. Beta
23	Tools	Erase Banks and Settings	Erases banks and settings from the T-1. Consider this like a factory reset.
24	Tools	Get Crash report	Allows a crash report to be extracted and saved

10 System Configuration

	Menu	Sub-Menu	Description
25	View	Reload	Reloads the T-1 Config app.
26	View	Force Reload	Forces a close and reload of the T-1 Config app.
27	View	Actual Size	Resets the T-1 Config window to the default actual size
28	View	Zoom In	Zooms in on the T-1 Config window.
29	View	Zoom Out	Zooms out on the T-1 Config window.
30	View	Toggle Full Screen	Expands T-1 Config app to full screen.
7	Help	User Manual	Opens T-1 Official manual.
8	Help	Changelog	Opens firmware change log details
9	Help	Learn More	Link to Torso electronics Website

10.6 T-1 Config Pages

The detailed application and functionality of various configurations and settings are covered in the relevant topic sections. An overview of T-1 Config and it's pages are covered here as a reference.

T1 Config - Home Page
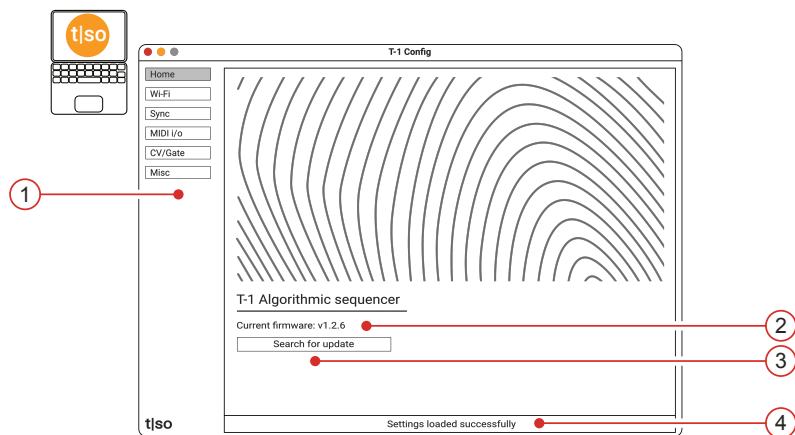
	Setting	Function	Description
1	Menu	T-1 Config page navigation	Selects Home, WiFi, Sync, MIDI I/o, CV/Gate, Misc pages.
2	Firmware	Current firmware version	Indicates current firmware installed on the connected T-1 device. Automatic updates will be notified.
3	Manual Update	Manual Update Check	Allows manual search for updates
4	Message	Notifies of Status	

10 System Configuration

T1 Config - WiFi Page

Used to set up and connect devices over a wireless network. T-1 has the ability to act as a wireless hotspot.
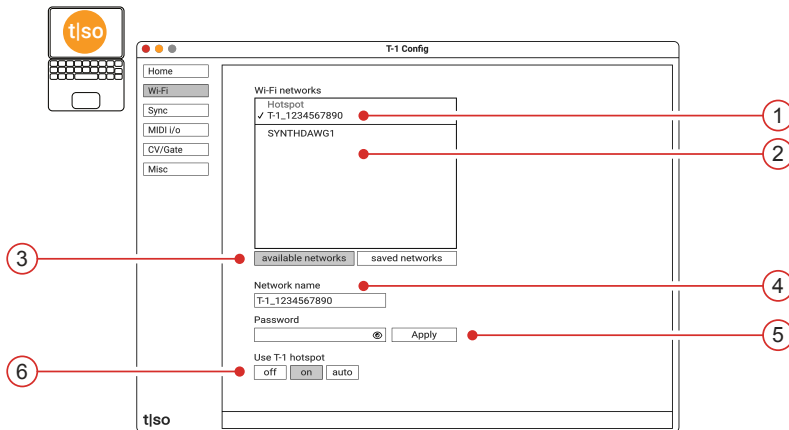
	Setting	Function	Description
1	Active Network	Currently connected WiFi network	The active connected network or hotspot shown checked.
2	Networks	Available networks	List of available or saved networks to choose to connect.
3	Filter	Lists available or saved networks	Filters the view to list either available or previously saved networks
4	Network Name	Hotspot name	Available when selecting a hotspot. Name can be edited.
5	Password	Password Entry	Option to enter a hotspot password in order to connect. Also entry for a password to access a selected network
6	Use T-1 Hotspot	Selects Hotspot Option	Available when selecting hotspot. Option to set as hotspot. Yes - Set as Hotspot, Off - Do not use Hotspot, Auto - Use hotspot when no saved networks are available

T1 Config - Sync Page

General synchronisation between devices. Mainly covers the wireless link and analog
signal connections which are accessed at the rear of T-1.
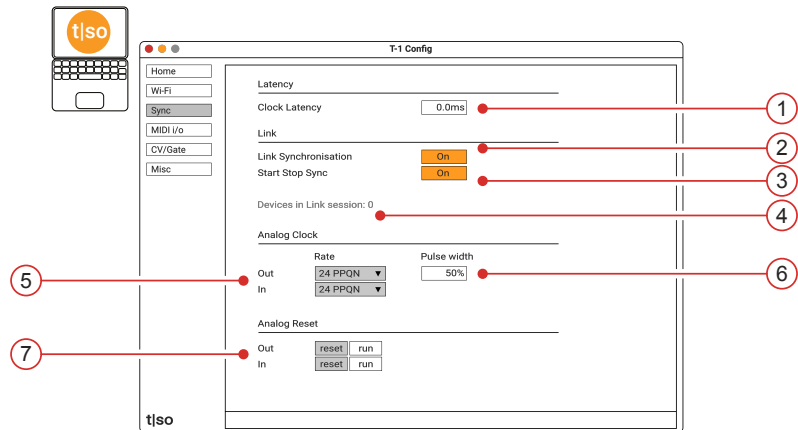
|	Setting	Function	Description
1	Latency	Clock Latency	Allows compensation for any lag on control between connected devices. Clock Latency - Default 0.00ms. Can be adjusted -200ms to 200ms if there is a timing error between the clock and notes.
2	Link Sync	Ableton Link Synchronisation	Enables - On or disables - Off synchronisation across wireless connections with Ableton link
3	Start Stop Sync	Synchronisation of transport	T-1 reacts to incoming link messages from peers for start stop when on.
4	Link Devices	Number of connected devices	Indicator of the number of link currently connected devices.
5	Analog Clock	Incoming and Outgoing clock	Sets the PPQN - Pulses Per Quarter Note rate for the analog clock connection.
6	Pulse Width	Analog Clock Pulse Width	Adjustment of clock pulse width for the analog clock connections. Settings between 15%-85% are available.
7	Analog Reset	Analog Reset Input / Output	Select option for the analog reset connections. Can act as a short pulse reset signal or run signal, high when T-1 is playing, low when stopped.

10 System Configuration

T1 Config - MIDI i/o

Focus on MIDI Input and Output settings. Mainly covers the USB and MIDI trs connections which are accessed at the rear of T-1.
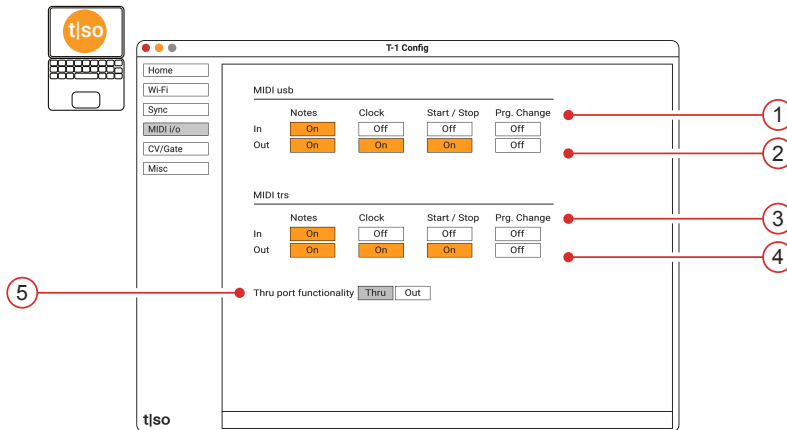
	Setting	Function	Description
1	MIDI USB In	MIDI settings for USB connection	Option for clock, start/stop. When On T-1 would typically be a secondary follower. Program change received to allow cueing / changing patterns when On.
2	MIDI USB Out	MIDI settings for USB connection	Option for clock, start/stop. When On T-1 would typically be a primary lead. Program change send when patterns are changed on T-1, when set to On.
3	MIDI TRS In	MIDI settings for TRS connection	Option for clock, start/stop. When On T-1 would typically be a secondary follower. Program change received to allow cueing / changing patterns when On.
4	MIDI TRS Out	MIDI settings for TRS connection	Option for clock, start/stop. When On T-1 would typically be a primary lead. Program change send when patterns are changed on T-1, when set to On.
5	Thru Port	Thru or Out	Selects how the rear thru port behaves. Thru transmits MIDI In to Thru. Out acts as a second output, reflecting MIDI Out. When set to Out additional configuration parameters are made available similar to MIDI Out.

T1 Config - CV/Gate Page

General control voltage and gate output routing which is based on MIDI Channels routed to CV/Gate connections which are accessed at the rear of T-1. CV can be configured as additional gates. Typically CV and Gates are associated with modular system interfacing.
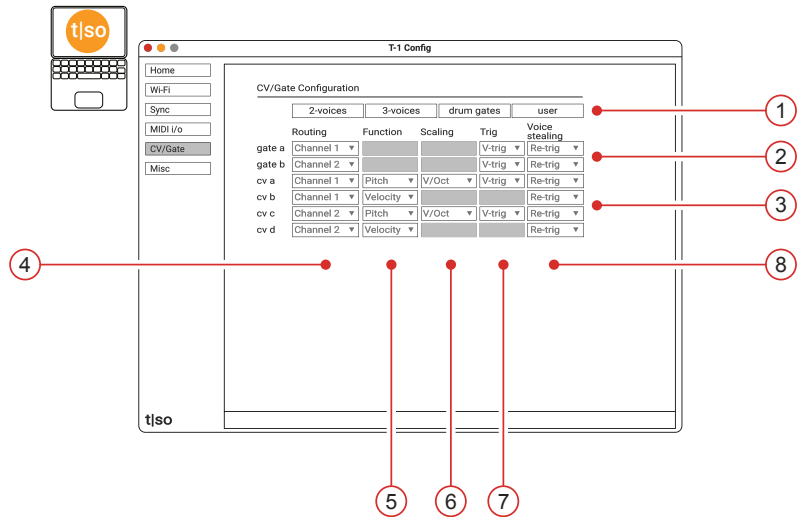
Preset Settings

2-Voices

CV/Gate Configuration

	2-voices	3-voices	drum gates	user	
	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▼			V-trig ▼	Re-trig ▼
gate b	Channel 2 ▼			V-trig ▼	Re-trig ▼
cv a	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv b	Channel 1 ▼	Velocity ▼			Re-trig ▼
cv c	Channel 2 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv d	Channel 2 ▼	Velocity ▼			Re-trig ▼

3-Voices

CV/Gate Configuration

	2-voices	3-voices	drum gates	user	
	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▼			V-trig ▼	Re-trig ▼
gate b	Channel 2 ▼			V-trig ▼	Re-trig ▼
cv a	Channel 3 ▼	Gate ▼		V-trig ▼	Re-trig ▼
cv b	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv c	Channel 2 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv d	Channel 3 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼

Drum Gates

CV/Gate Configuration

	2-voices	3-voices	drum gates	user	
	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▼			V-trig ▼	Re-trig ▼
gate b	Channel 2 ▼			V-trig ▼	Re-trig ▼
cv a	Channel 3 ▼	Gate ▼		V-trig ▼	Re-trig ▼
cv b	Channel 4 ▼	Gate ▼		V-trig ▼	Re-trig ▼
cv c	Channel 5 ▼	Gate ▼		V-trig ▼	Re-trig ▼
cv d	Channel 6 ▼	Gate ▼		V-trig ▼	Re-trig ▼

User

CV/Gate Configuration

	2-voices	3-voices	drum gates	user	
	Routing	Function	Scaling	Trig	Voice stealing
gate a	Channel 1 ▼			V-trig ▼	Re-trig ▼
gate b	Channel 1 ▼			V-trig ▼	Re-trig ▼
cv a	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv b	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv c	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼
cv d	Channel 1 ▼	Pitch ▼	V/Oct ▼	V-trig ▼	Re-trig ▼

10 System Configuration

	Setting	Function	Description
1	Presets	4 defined preset configurations	2-Voices: Gate, Velocity and Pitch output on Channels 1 & 2.
			3-Voices: Gate and Pitch output on Channels 1, 2 & 3.
			Drum gates: Drum gates on channels 1-6
			User: User defined and saved configuration
2	Gates	Gate Outputs a and b	Configures the routing and format for gate outputs a and b.
3	CV	Control Voltage Outputs a,b,c,d	Configures the routing and format for CV outputs a, b, c and d.
4	Routing	MIDI Channel routed to Gate/CV	Selects the routing from the track MIDI channel to the Gate or CV output
5	Function	Application of the output	Gate: Configures output as a gated pulse. CV Outputs can also be configured as gates. Gates cannot be set for CV.
			Pitch: Configures a control voltage output for pitch control with scaling and trig configuration options available.
			Velocity: Configures a control voltage output for velocity control.
6	Scaling	Format for Pitch Scaling	V/Oct or Hz/Volt. This will depend on the connected device format and compatibility. Eurorack and Moog typically uses V/Oct. Hz/V typically used with Korg and Yamaha.
7	Trig	Format for Trig Voltage	Sets the trigger polarity type. V-Trig has a +5V to trigger note on where S-Trig activates at 0V and note off at +5V. Select based on destination device.
8	Voice Stealing	Voice Management Behaviour	Selects option for behaviour of how voices are managed:-
			Top - Higher notes steal the voice.
			Bottom - Lower notes steal the voice.
			Re-trig - New note always steals the voice.

T1 Config - Misc Page

Contains general information not covered in any specific section.
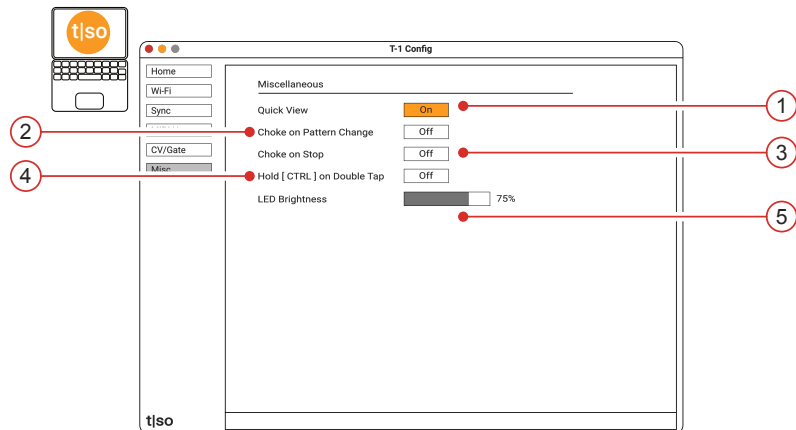
	Setting	Function	Description
1	Quick View	Visualise value buttons	Temporarily display the illuminated value button status when turning the parameter knob when set to 'ON'
2	Choke on Pattern Change	NOTE OFF message	Sends a MIDI Note Off message immediately when a pattern is changed
3	Choke on Stop	NOTE OFF message	Sends a MIDI Note Off message immediately when a pattern is stopped
4	CTRL Option	Double tap to lock	Selects the option, when on, to double tap [CTRL] to lock selection.
5	LED Brightness	Brightness Setting	Adjust the LED brightness of the user interface buttons.

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