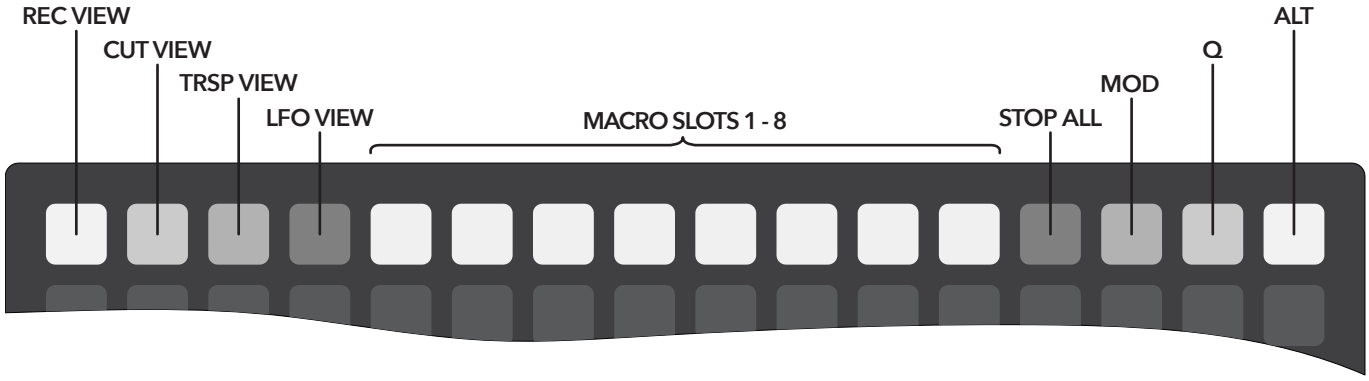
mlre is an extended version of tehn's mlr. New features and functionality were added with performative aspects in mind, trying to optimize grid and UI interaction but keeping it as simple and as close to the original as possible. This manual covers all additional features and changes. If something is unclear, please post your questions on //////// in the mlre thread. Enjoy!

GRID NAVIGATION:



GRID NAVIGATION is referred to as the top row of the grid and is accessible from all pages.

- Press **REC VIEW – LFO VIEW** to change the grid page accordingly.
- Press **STOP ALL** to stop all playing tracks and patterns.
- Press **Q** to toggle **quantization** on/off. When quantization is on grid key presses are quantized according to the **quantization value** is set in **CLIP VIEW**. Quantization is always synced to the system clock.
- **ALT** and **MOD** are modifier keys and used for different key **COMBOS**.

KEY COMBOS:

- Hold **ALT** and press **Q** to enter **CLIP VIEW**.
- Hold **ALT** and press **REC VIEW** to clear the active clip of the **focused** track.
- Hold **ALT** and press **TRSP VIEW** to clear both softcut buffers for **all** tracks.
- Hold **ALT** and press **MOD** to set the playback position of all playing tracks to the first step (loops are cleared).
- Hold **ALT** and press **STOP ALL** to trigger **ALT RUN** (see **REC VIEW**).
- Hold **MOD** and press **ALT** then release **MOD** to lock into **HOLD MODE** (see **CUT VIEW**). Press **MOD** to unlock.

MACRO RECORDING AND PLAYBACK:

In total there are 8 **PATTERN**, 8 **MANUAL RECALL** and 8 **SNAPSHOT** slots available. The settings are made under ***global parameters > macros***. For information about **macro-slot** assignment and differences between **manual recalls** and **snapshots** go to **GLOBAL PARAMETERS**.

PATTERNS:

- Each **PATTERN** slot can store and loop a sequence of key presses. Key presses for **LFO** are not recorded.
- Press an empty **PATTERN slot** to **arm** recording (indicated by a fully lit pad).
- Enter a sequence of key presses. Press the **PATTERN slot** again to enter **PATTERN play** and **loop** the sequence (looping slots are slightly less bright than armed slots).
- Press **PATTERN slot** again to **stop** looping (inactive **PATTERN slots** are slightly brighter than empty slots).
- Hold **MOD** and press the **PATTERN slot** to enter **overdub** mode (corresponding key flashes). Additional key presses are added to the current looping pattern. Press **PATTERN slot** again to exit overdub mode and continue in **PATTERN play** mode. **IMPORTANT:** Undo is **not** possible.
- Hold **ALT** and press the corresponding pad to clear the slot.

MANUAL RECALLS:

- Each **RECALL** slot can **store** specified key states. Key presses for **LFO** are not stored.
- Press an empty **RECALL** slot to **arm** (indicated by a fully lit pad).
- Press keys that you wish to store the state of. Press the **RECALL** slot again to **store** the key states (slots with data are slightly less bright than armed slots).
- Press **RECALL** slot to recall stored key states.
- Hold **ALT** and press the corresponding pad to clear the slot.

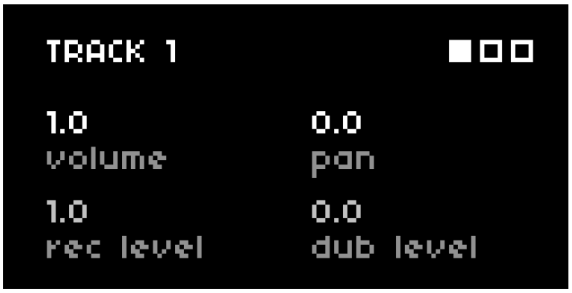
SNAPSHOTS:

- Press an empty **RECALL** slot to **save** a **snapshot** (slots with data are brighter than empty slots).
- Press the **RECALL** slot to **recall** the **snapshot**.
- Hold **ALT** and press the corresponding pad to clear the slot.

MAIN SCREEN:

The main screen consists of 3 pages and is displayed on **REC VIEW**, **CUT VIEW** and **TRSP VIEW**.

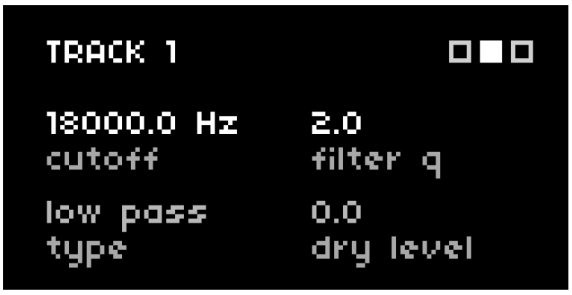
Use **ENC1** to scroll or alternatively **K3** to cycle through the pages. Use **K2** to toggle between the top and bottom row (active row is highlighted) and use **ENC2** and **ENC3** to change the corresponding parameter values. If an arc controller is connected hold **K1** and press **K3** to cycle through the arc pages (see **ARC CONTROL**).



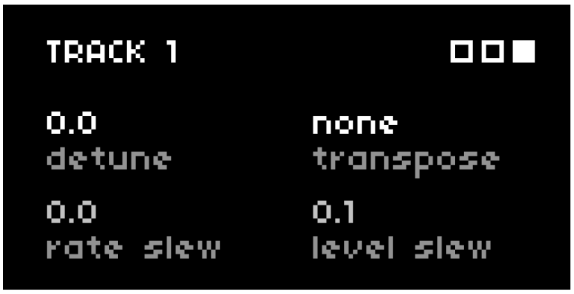
- **volume: (0 – 1)**
- **pan: (-1 – 1)**
- **rec level: (0 – 1)**
- **dub level: (0 – 1)** 1 = 100% of the previous recording material is preserved.

If a track is muted (**ALT** + **PLAY**) the screen displays "**[muted]**" instead of "**volume**" for the according track. Volume, pan and dub level can be mapped to the LFOs.

TIPP: Map a fast s&h LFO to dub level and turn on occasionally for a "degrading loop" effect.



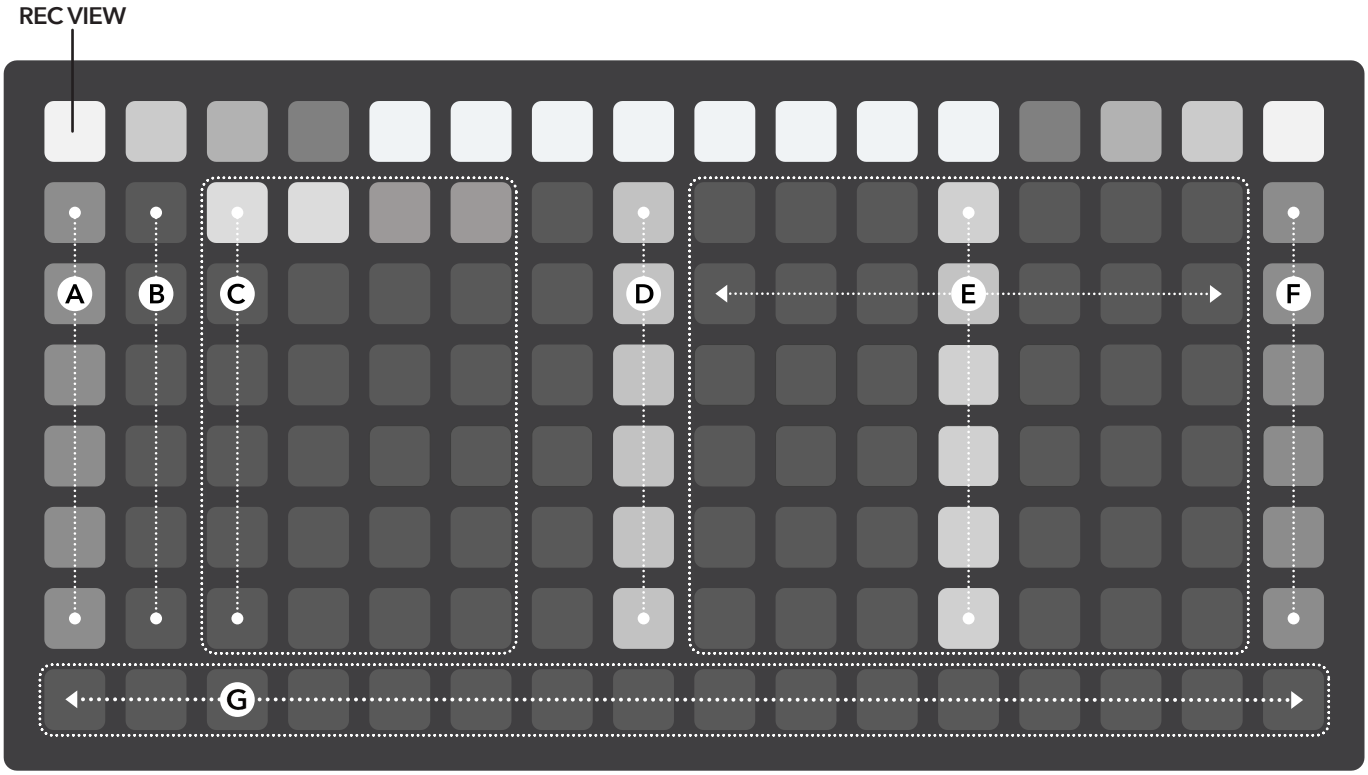
- **cutoff: (20 – 18000 Hz)**
- **filter q: (0.01 – 4)** higher "resonance" at lower values
- **type: (low pass, high pass, band pass, band reject, off)**
- **dry level: (0 – 1)** dry signal level (disabled when filter type is set to "off".



- **detune: (-1 – 1)** track speed (+/- 1 octave)
- **transpose: (15 steps)** center value (8) = no transposition
- **rate slew: (0 – 1)** slew of track speed changes
- **level slew: (0.1 – 1)** slew of volume changes

The scale used to transpose the tracks is specified in the global parameters. Scales can be added and/or customized in the main script (mlre.lua). See **GLOBAL PARAMETERS** for details.

REC VIEW:



A: Toggle **REC** for tracks 1-6. Hold **ALT** and press the key to activate **fade out mode**: If **REC** is **off** the track will be overwritten with silence according to the "dub level" setting. Higher values result in longer fadeouts as more material is preserved per overwrite.

B: Press key to **ARM** the track for **one-shot recording**. Hold **ALT** and press the key to **ARM** the track and activate **auto-length mode**. A flashing key indicates an armed track.

C: Select **FOCUS** for tracks 1-6. Hold **ALT** and press the row to **tempo map** the corresponding track to system clock. The rightmost key is bright if track is tempo mapped. Hold **MOD** and press the row to **switch buffer**. The two centre keys indicate whether the **main buffer** (left) or the **temp. buffer** (right) is active (see **CLIP VIEW**).

D: Toggle **REVERSE** playback for tracks 1-6. Hold **ALT** and press the key to activate the **tape warble** effect. A brighter lit key indicates if tape warble is on. Go to ***track parameters > track warble*** for settings.

E: Select **SPEED** for tracks 1-6 (+/- 3 octaves). Hold **ALT** + **centre key** to randomize parameters according to the settings under ***global parameters > randomization***.

F: Toggle **PLAYBACK** for tracks 1-6. Hold **ALT** and press the key to **mute** the track. Hold **MOD** and press the key to toggle **track select** for the corresponding track (see **REC VIEW** cont.).

G: **CUT VIEW** of the focused track.

REC VIEW continued:

One-shot recording:

- When **one-shot recording** is activated for a track, recording starts when the threshold specified in ***global parameters > rec threshold*** is reached. If the track is not playing, the recording will start at the first step. If a track is playing, the recording will start wherever the play-head is. Recording is deactivated after one cycle i.e., the length of the clip.
- If **REC** is pressed **before** the cycle ends the start- and endpoints are calculated, and the track is automatically looped.
- When **auto-length mode** (**ALT** + **ARM**) is activated a playing track is stopped before recording can start. If **REC** is pressed before the end-of-cycle is reached, the track length is set according to the length of the recorded clip (time between **REC** "on" and **REC** "off").

Track select mode:

When **track select** is active for a given track the corresponding key is slightly brighter than the others. These tracks respond to two additional functions:

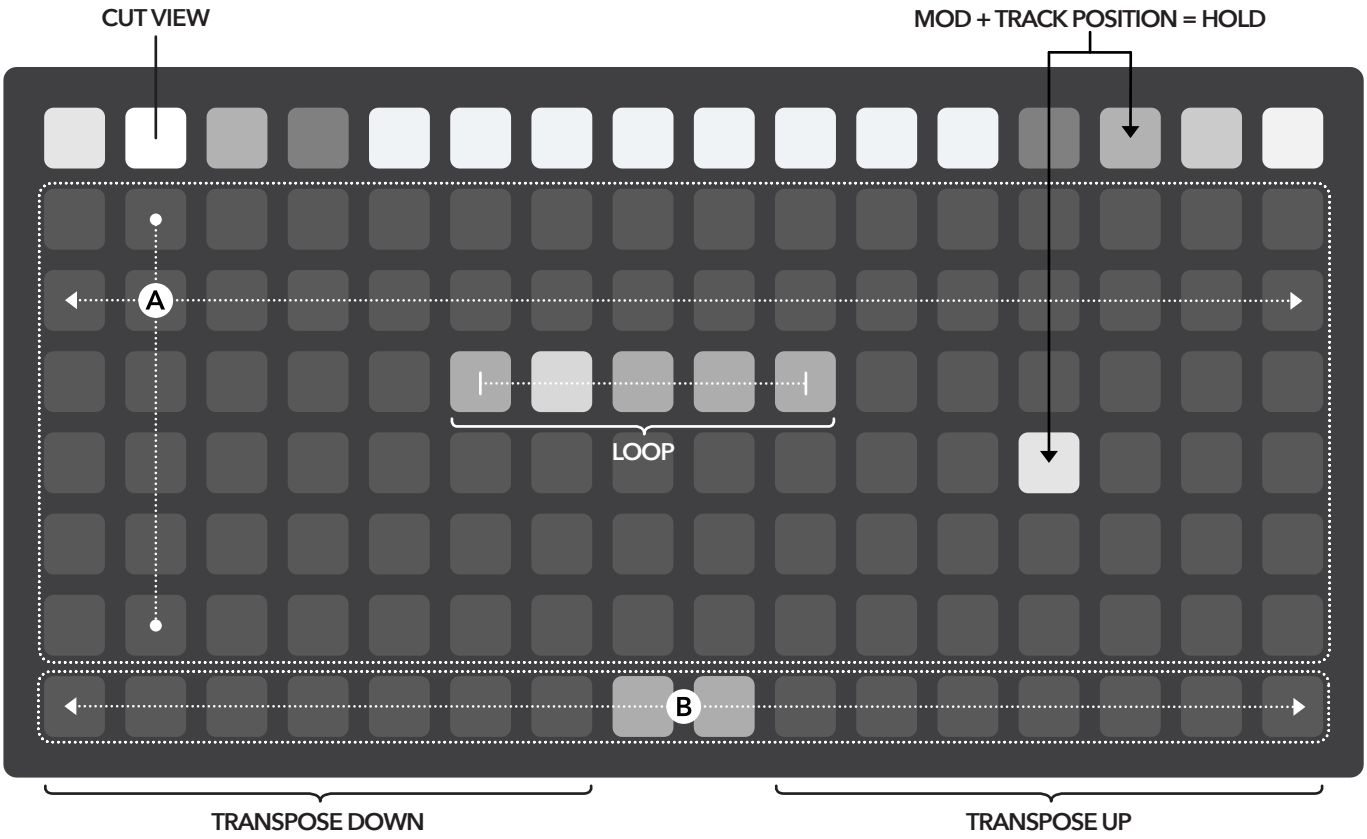
- **ALT RUN** combo (**ALT** + **STOP ALL**): playing tracks will stop and stopped tracks will play.
- If "**randomize @ oneshot**" or "**randomize @ step count**" is turned on in the global settings, specified parameters are randomized after a one-shot cycle ends. See ***global parameters > randomization***.

Tape warble effect:

All effect parameters can be adjusted per track in the corresponding ***track parameters > track warble*** section.

- **amount [0-100%]:** sets the chance for a "warble event" to occur. Warbles happen more often at higher settings.
- **depth [0-100%]:** sets how strong the warble effect is (i.e., the effect on playback speed).
- **speed [1-10]:** sets the speed of the warble LFO. At lower settings the changes in playback speed are slow and at higher settings fast.

CUT VIEW:

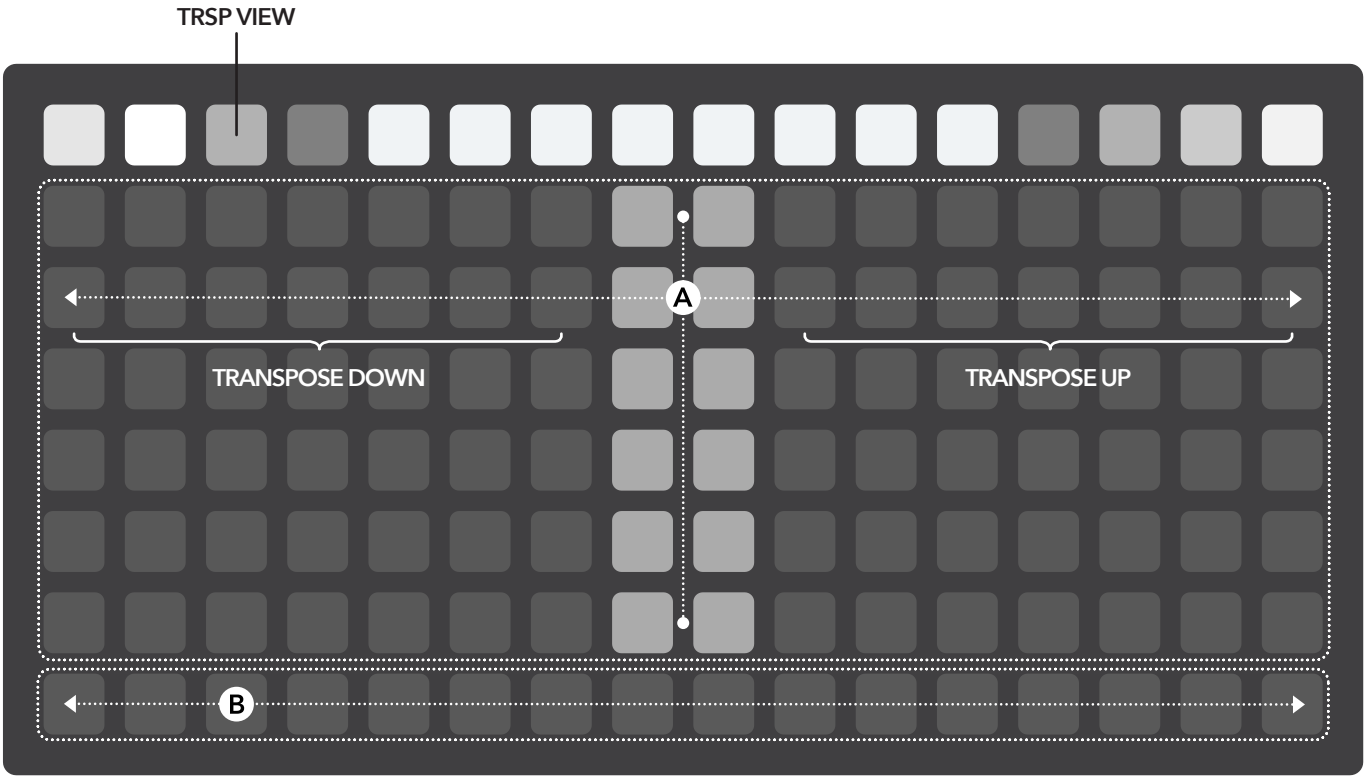


A: Set play-head position for tracks 1-6.

- **CUT:** Press any key (1-16) of a track row to jump to that position.
- **LOOP:** Press and hold any key (1-16) of a track row to set start position. Press any other key within the track row to set the loop size. Looping starts when the keys are released.
- **HOLD:** Hold **MOD** and press any key (1-16) to set a one-key-loop (aka **HOLD**). To lock into **HOLD MODE** hold **MOD** and press **ALT**, then release **MOD** before releasing **ALT**. Press **MOD** to unlock.
- **START/STOP:** Hold **ALT** and press any key (1-16) of a track row to start/stop the corresponding track.
- **FOCUS:** Press any key (1-16) of a track row to **FOCUS** the corresponding track. If an arc controller is connected hold the **CUT VIEW** key and turn **ENC 4** to select which track is in **focus** (this allows to set focus without touching any of the track keys).

B: **TRANSPOSE FOCUSED TRACK** (see **TRSP VIEW**).

TRSP VIEW:



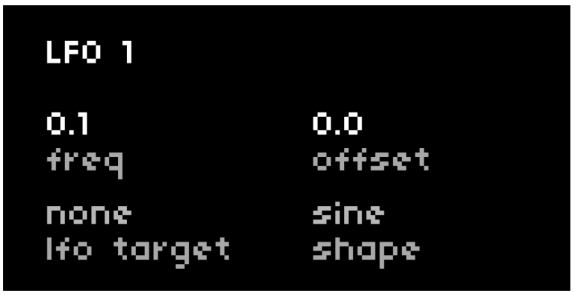
A: TRANSPOSE TRACK 1-6

- Keys 7-1 **TRANSPOSE** the track speed **down** and keys 10-16 **TRANSPOSE** the track speed **up**, specified by the scale settings in ***global parameters > scale***. Scales can be easily modified (see **GLOBAL PARAMETERS > custom scales**).
- **START/STOP:** Hold **ALT** and press a centre key of a track row to start/stop the play-head.
- **FOCUS:** Press any pad (1-16) of a track row to **FOCUS** the corresponding track.
- **SPEED:** Hold MOD and key 8 to decrease **SPEED** or key 9 to increase **SPEED** (see **REC VIEW**).

B: CUT VIEW of **FOCUSED TRACK** (see **CUT VIEW**)

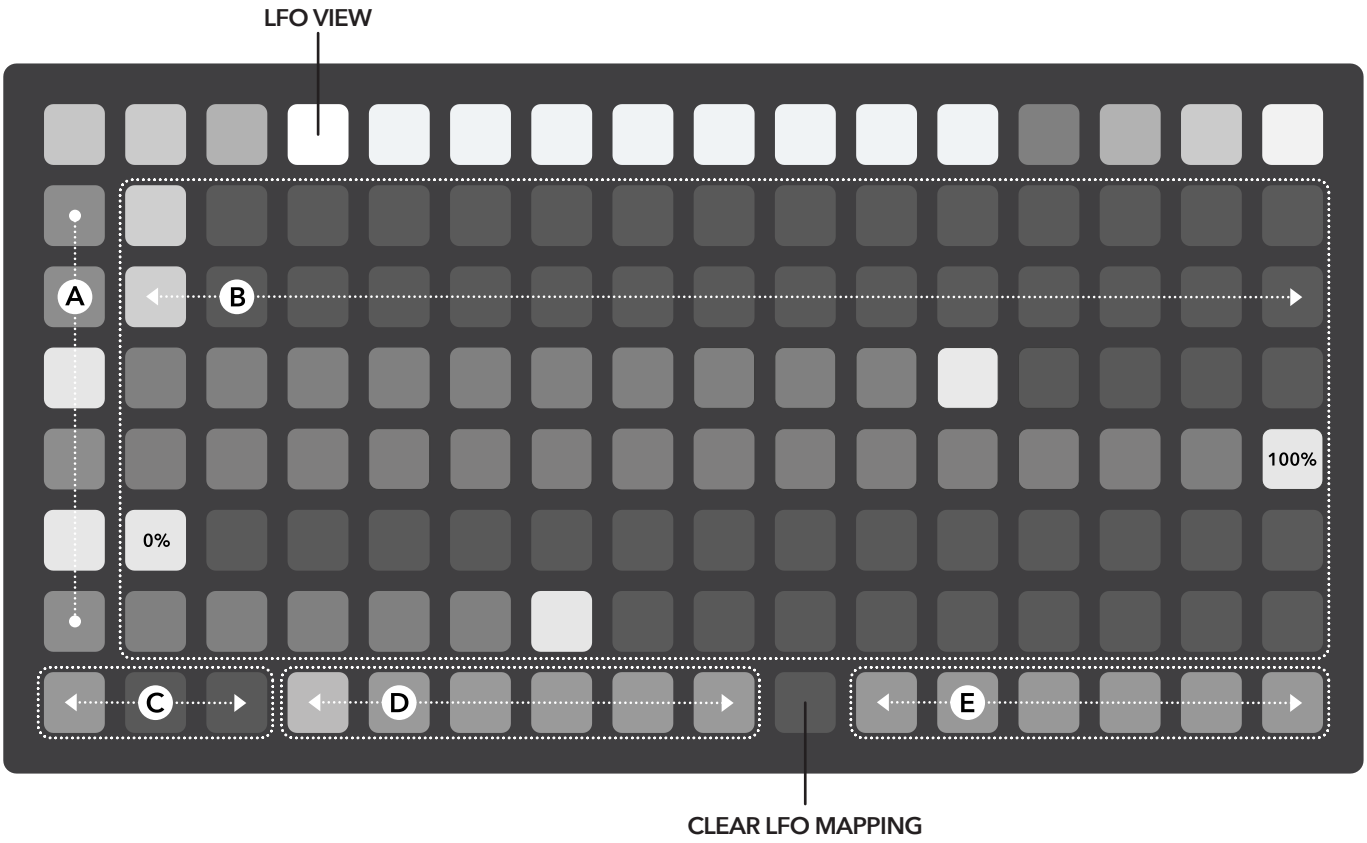
LFO VIEW:

Norns' screen displays which LFO is currently in **FOCUS**. Use **ENC1** to scroll or **K3** to step through the LFOs 1-6. Alternatively press any key within the LFO rows (2-7) to **select** an LFO. Use **K2** to toggle between the top and bottom row (active row is highlighted) and use **ENC2** and **ENC3** to change the corresponding parameter values. The parameters "**target**", "**shape**" and "**range**" can be accessed via grid for quick LFO mapping.



- **freq: (0.1 - 10)**
- **offset: (-1 - 1)**
- **lfo target: (vol, pan, dub, transpose, rate_slew, cutoff)**
- **shape: (sine, square, s&h)**
- **range: (low, mid, high)** hold **ALT** to access.

LFO VIEW continued:



A: Toggle **LFO STATE** (on/off) for LFOs 1-6.

B: Set **LFO DEPTH** for LFOs 1-6.

C: Set **LFO SHAPE** for the **selected LFO**. Hold **ALT** to set **LFO RANGE** for the **selected LFO**.

D: Select **TRACK** of destination (1-6)

E: Select **TARGET** of the **selected LFO**.

LFO MAPPING:

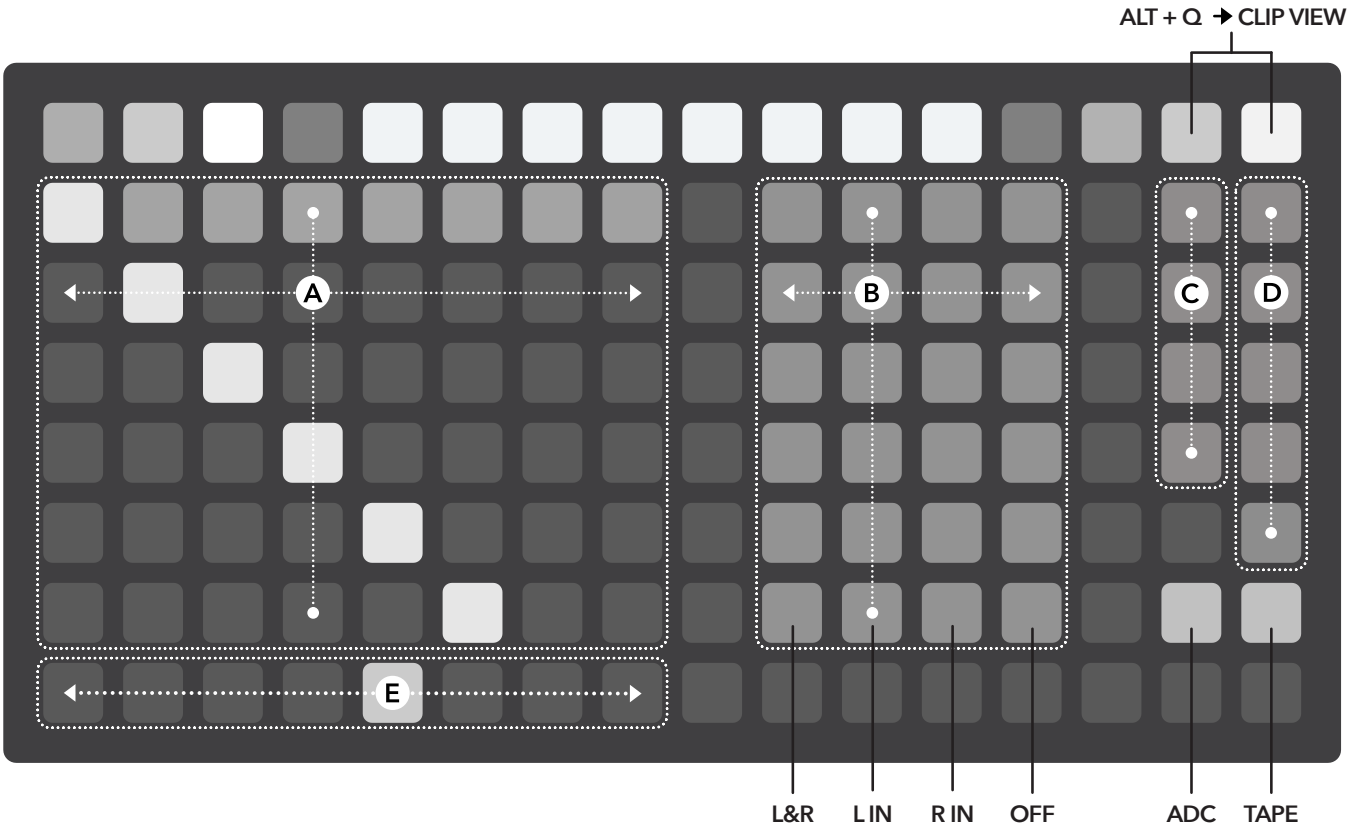
1. Select **LFO [FOCUS or ENC1 or K3]**
2. Select the **TRACK [D]**
3. Select the **TARGET [E]**
4. Adjust **LFO DEPTH [B]** and turn on **[A]**

► **TIPP:** If you set LFO depth back to zero before switching the LFO off, the modulated parameter will return to its initial state.

CLIP VIEW:

In **CLIP VIEW** clip allocation, clip size, input routing and track routing is handled.

Each of the 8 clips can have a maximum length of 42 seconds and are assigned to a specific region of the softcut buffer/s. Each clip has two "sides" (like the sides of a tape): **main** buffer and **temporary** buffer. The main buffer is stored to disk together with a pset (see **SAVING AND LOADING SESSIONS**) and the temporary buffer is discarded when the script is closed. Switching between buffers can be done in **REC VIEW** or via MIDI controller. It is possible to copy the audio from one buffer to the other via key combo (see below). The currently active buffer is then copied to the non-active buffer (i.e., if the **main** buffer is active the clip is copied to the **temporary** buffer and **vice versa**). As there is no way to undo recordings this allows one "backup" a clip and return to it later.



A: Set **CLIP** 1-8 (columns) of the corresponding track 1-6 (rows). The highlighted row displays the **FOCUSED** track. Hold **MOD** and press any key within a track row to copy the active buffer of the **selected clip** to the non-active buffer.

B: Set **INPUT SOURCE** for tracks 1-6.

C: Toggle "**SEND** to **TRACK 5**" to internally route tracks 1-4 to track 5.

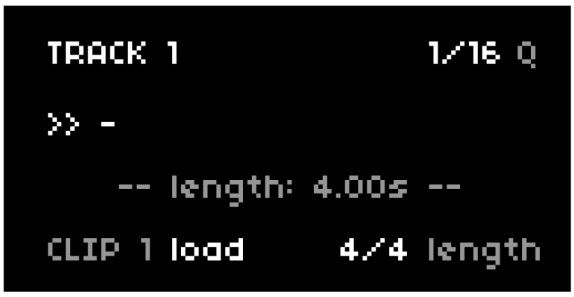
D: Toggle "**SEND** to **TRACK 6**" to internally route tracks 1-5 to track 6.

E: Set **QUANTIZATION** (1bar, 1/2, 1/3, 1/4, 1/6, 1/8, 1/16, 1/32). Quantization is synced to the system clock.

ADC: Press to toggle ADC to softcut on/off (on by default)

TAPE: Press to toggle TAPE to softcut on/off (off by default)

CLIP VIEW continued:



- Use **ENC2** to scroll through the clip actions (***load***, ***clear***, ***save, reset***) and press **K2** to trigger the clip action.
  >> displays the currently loaded clip file.
- Use **ENC 3** to scroll through the clip length options and press **K3** to **resize** the clip.
- The **QUANTIZATION** set by **(E)** is displayed by "**Q**".

Clip actions:

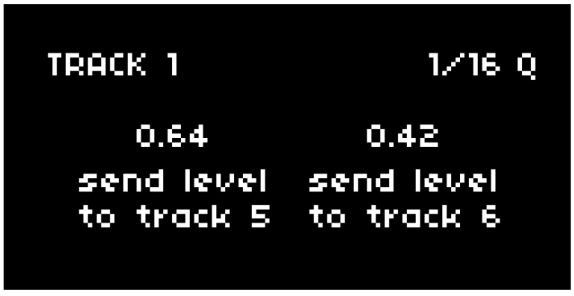
- **Clip load:** Load audio file (mono, 48kHz, max. 42s length)
- **Clip clear:** Active buffer of the selected clip is cleared, and the clip resized according to the length setting.
- **Clip save:** Save recorded audio file.
- **Clip reset:** Initial clip length is restored (e.g., if a loaded clip was resized it's restored to the original length).

Length:

Tracks which are not tempo-mapped have a default clip length of 4s (1bar at 60bpm). Set the length of the clip (values displayed as quarter notes: 4/4 = 1bar) and press **K3** to resize the clip. If **tempo-map mode** is set to **repitch** and the track is **tempo-mapped** the bpm and speed of the clip is recalculated according to the time signature value.

Internal track routing:

The output of tracks 1–4 can be internally routed to track 5 and tracks 1–5 to track 6. Track routing is post-filter and pre-fader the level is set via the corresponding send level. Muted tracks will not send audio to routed tracks. The send levels of the **FOCUSED** track can be set by holding **K1** and using **ENC2** and **ENC3** to set the send levels **to track 5** and **to track 6** respectively. Note that no send levels will be displayed when track 6 is focused.

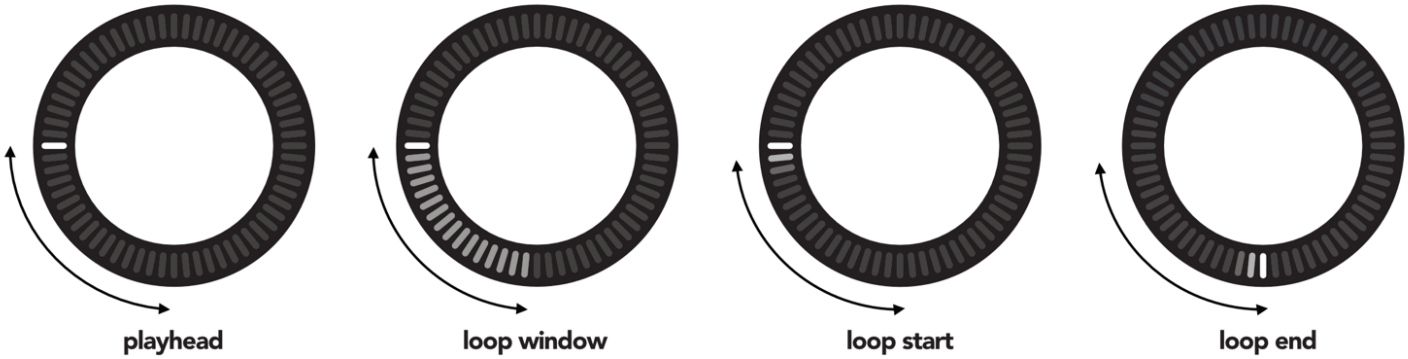


- Select track row. Hold **K1**.
- Use **ENC2** to set the send level to track 5.
- Use **ENC 3** to set the send level to track 6

ARC CONTROLS:

Arc controls are only available if an arc controller is connected. There are three arc pages available: **TAPE**, **LEVELS** and **LFOs**. While in **REC**, **CUT** or **TRSP VIEW** hold **K1** and press **K3** to cycle through the pages. In **LFO VIEW** only the **LFOs** page is available and in **CLIP VIEW** arc controls are currently disabled. The orientation of the arc controller can be selected under ***global parameters > arc settings***. Note that the ***arc settings*** are only visible if an arc controller is connected (hot plugging supported).

ARC – TAPE

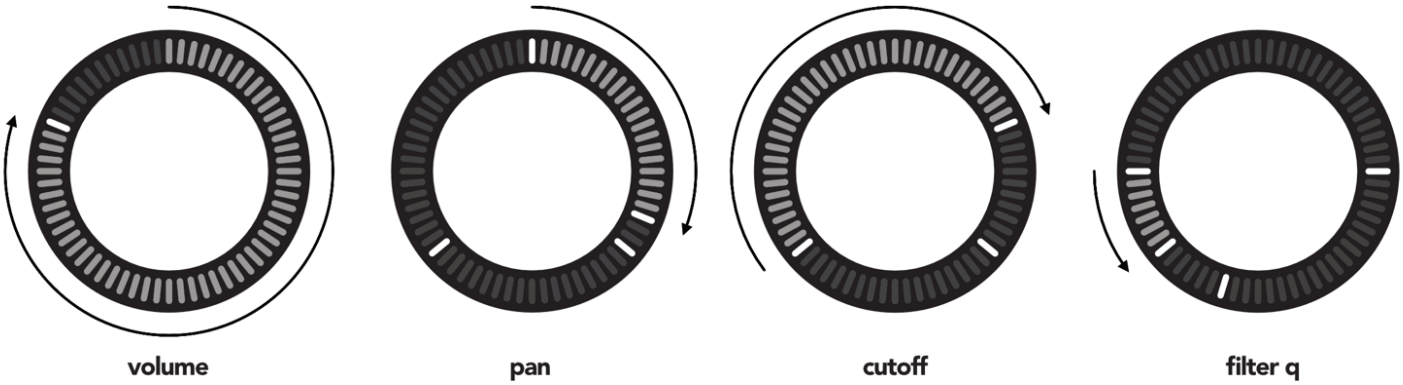


- **ENC 1 – play-head:** The play-head encoder ring displays the position of the play-head at a 64-step resolution. The indicator rotates CCW for tracks playing forward and CW for tracks playing in reverse. **ENC 1** has different functions depending on the settings found under ***global parameters > arc settings:***
  - **enc1 > start [off, on]:** If **on** moving the encoder will start playback of the focused track.
  - **enc1 > direction [off, on]:** If **on**, rotating the encoder CCW will set the playback direction of the focused track to forward and rotating the encoder CW will set the playback direction to reverse.
  - **enc1> mod [off, warble, scrub]:** If set to **warble**, moving the encoder will temporarily speed up/slow down the playback speed of the focused track. If set to **scrub**, moving the encoder will scrub through the clip of the focused track. The **scrub sensitivity** can be set under ***global parameters > arc settings***.
- **ENC 2 – loop window:** The loop window encoder ring displays the loop window of the focused track. If looping is active the loop window is gradually adjusted by moving the encoder. If looping is inactive, moving the encoder will activate looping. (Any further encoder movements are ignored for 0.5s. This brief time-out prevents accidental loop window changes while activating loops via arc.) To disactivate looping hold ALT (on the grid) and move the encoder.
- **ENC 3 – loop start:** Set the start point of the loop window.
- **ENC 4 – loop end:** Set the end point of the loop window.

N.B. While recording a pattern when **quantization** is **on** you may experience jumps when moving the loop window, start and end points because the loop positions are called according to the Q-settings. Also, as the loop window, loop start and loop end points can be set in much smaller increments as the grid, the keys displaying playback position might be a bit off or flicker. This is expected behaviour.

While in **CUT VIEW** holding the **CUT VIEW** key will display the focused track on the encoder ring of **ENC 4**. Turn **ENC 4** to select the focused track.

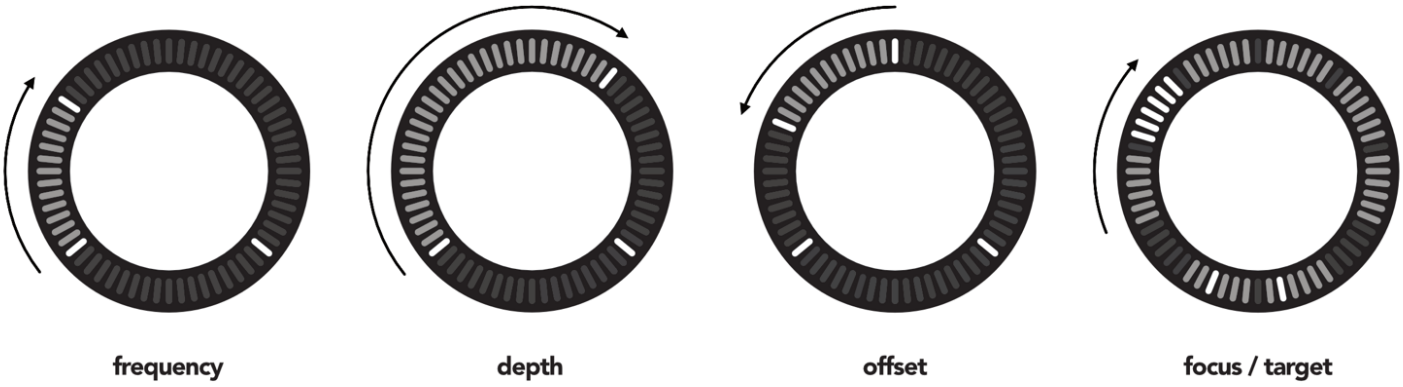
ARC – LEVELS



- **ENC 1 – volume:** Set the volume of the focused track. Increase volume by turning the encoder CW.
- **ENC 2 – pan:** Set the pan of the focused track.
- **ENC 3 – cutoff:** Set the filter cutoff of the focused track. Increase frequency by turning the encoder CW.
- **ENC 4 – filter q:** Set the filter q of the focused track. Decrease the q value by turning the encoder CW. Indicators represent q values of 4, 2, 1 and 0.1

While in **CUT VIEW** holding the **CUT VIEW** key will display the focused track on the encoder ring of **ENC 4**. Turn **ENC 4** to select the focused track.

ARC – LFOs



- **ENC 1 – frequency:** Set the frequency of the focused LFO. Increase frequency by turning the encoder CW.
- **ENC 2 – depth:** Set the depth of the focused LFO. Increase the depth by turning the encoder CW. Setting the depth to values > 0 will automatically turn the LFO on. Turning the encoder fully CCW will turn the LFO off.
- **ENC 3 – offset:** Set the offset of the focused LFO.
- **ENC 4 - focus / target:** Turn the encoder to set which LFO is in focus. The display on the lower part of the encoder ring indicates which LFO target has been selected for the focused LFO. The six right LEDs indicate which track (1 – 6), and the six left LEDs indicate which target (vol, pan, dub, transpose, slew, cutoff).

  >> *The image above indicates that LFO 2 is in focus and that for LFO 2 the target is set to track 3 / pan.*

PARAMETERS:

In the parameters there are three sections: **global**, **tracks** and **modulation**. Most parameters for track and modulation are accessible over the grid / main screen interface. Global parameters are only available over the parameter menu. All parameters are MIDI-mappable.

TRACK PARAMETERS:

The track parameters are divided into five sections: **tape**, **filter**, **warble**, **control** and **trigger**. All track parameters that are **not** accessible via UI are listed below:

Tape:

- **playback mode [loop, oneshot, hold]:**
  - **loop-mode** is the default setting, where the play-head jumps to the start of the clip when the end of the clip is reached or vice versa.
  - In **oneshot-mode** the playback is stopped when the play-head reaches the end / start of a clip.
  - In **hold-mode** playback is active if a **track key** (**CUT VIEW**) is held. At key release the playback is stopped. Starting playback via **PLAYBACK** key in **REC VIEW,** key combos or MIDI ignores **hold-mode**.
  - Looping sections of a clip (via grid key combo or arc control) works the same in all modes.

  N.B.: While recording a pattern when **quantization** is **on** in **hold-mode** track start / stop are called in sync according to the Q-settings. This means when you hold a key, playback will start at the next quantize event and when you release a key playback will stop at the next playback event. Depending on the Q-settings fast key presses will not be registered as expected.

Warble:

- **amount [0-100%]:** Sets the chance for a "warble event" to occur. Warbles happen more often at higher settings.
- **depth [0-100%]:** Sets how strong the warble effect is (i.e., the effect on playback speed).
- **speed (1-10):** Sets the speed of the warble LFO. At lower settings the changes in playback speed are slow and at higher settings fast.

Control:

- The purpose of this section is for MIDI mapping specific track parameters that otherwise are only available via grid interface: **playback**, **mute**, **record**, **reverse**, **speed +** (increase speed) and **speed -** (decrease speed) can triggered via MIDI controller once they've been mapped accordingly.

Trigger:

Track to trigger mode was suggested by lines user @mlogger. The request is related to the way ***Charles Cohen played the Easel*** by clocking it using a looper pedal. The trigger functionality is available over a connected **MIDI device** and/or **crow** (running v3 or later).

The following parameters are available per track:

- **rec @step [off, 1 – 16]:** If set to other than off record will be toggled (on/off) for the corresponding track at the specified step (1 – 16).
- **trig @step [off, 1 – 16]:** If set to other than off an envelope / note on MIDI event will be sent over the selected trig output at the specified step (1 – 16).
- **trig @count [off, 1 – 16]:** If set to other than off an envelope / note on MIDI event will be sent over the selected trig output after a specified number of step counts (1 – 16). Stopping a track resets the counter.
- **trig output [off, crow 1, crow 2, crow 3, crow 4, midi]:** Select the output destination. If set to "**crow 1 – 4**" an AD envelope will be sent via the corresponding crow output and the crow parameters for the AD settings will be visible below the trig output parameter. If set to "**midi**" a MIDI note will be sent via the MIDI device specified under ***global parameters > midi settings*** and the MIDI parameters will be visible below the trig output parameter.

crow parameters:

These parameters define the AD envelope triggered by the corresponding track:

- **amplitude [0 – 10v]:** Amplitude of the AD envelope in volts.
- **attack [0 – 1s]:** Attack time of the AD envelope in seconds.
- **decay [0.01 – 1s]:** Decay time of the AD envelope in seconds.

midi parameters:

These parameters define the MIDI note triggered by the corresponding track:

- **midi channel [1 – 16]:** Set MIDI channel.
- **midi note [1 – 127]:** Set MIDI note.
- **midi velocity [1 – 127]:** Set MIDI velocity.

There are many ways this feature can be used, and experimenting is the key. To get started here are a few ideas:

▷ If you don't have a crow, use your MIDI-to-CV module of choice to send trigs to your modules.
▷ Use the trigs to fire scripts on your teletype.
▷ Use multiple tracks to send trigs to the same destination to create interesting rhythms.
▷ Clock you're sequencer with them.
▷ Run your mlre output through filters, effects etc. and modulate them with trigs and envelopes.
▷ Use MIDI to fire samples from your sampler of choice or create interesting drum patterns.

GLOBAL PARAMETERS:

- **scale: (scales)**
- **rec threshold: (-40 - 6dB)**
- **tempo-map mode: (resize, repitch)**
- **macros: (macro slots & recall mode)**
- **midi settings: (midi device & midi transport)**
- **track control: (midi mappable track parameters)**
- **randomization: (auto randomize & parameters)**

scales [scales list]:

- mlre comes with a selection of predefined scales for track transposition to choose from: "**major**", "**natural minor**", "**harmonic minor**", "**melodic minor**", "**dorian**", "**phrygian**", "**lydian**", "**mixolydian**", "**locrian**" and "**custom**".
- **custom scales:** Scales can be easily modified in the ***mlre.lua*** script. Transposition steps are defined as cents in the **trsp_scale** table. The values displayed on the screen are set in the **trsp_id** table. The values which are displayed don't affect the transposition function and can be defined according to taste. The number of scales specified is "unlimited", however, the format must be kept. The index of the scale name specified in the **scale_options** table points to index of the **trsp_id** and **trsp_scale**. All scales consist of 15 steps (centre reference = index 8 == no transposition). For clarity the indexing is highlighted in different colours in the example below.

  example:

```
--scale names (these are displayed in the params menu)
local scale_options = {"major", "minor", "custom"}

--transposition step id (these are the values displayed)
local trsp_id = {
{"-P8","-m7","-m6","-P5","-P4","-m3","-m2","none","M2","M3","P4","P5","M6","M7","P8"},
{"-P8","-m7","-M6","-P5","-P4","-M3","-M2","none","M2","m3","P4","P5","m6","m7","P8"},
{"type","your","own","notation","here","the","values","don't","really","matter",
"except","the","number","of","values"}}

--steps in cents (these are the transposition steps in cents, 8th value is 0)
local trsp_scale = {
{-1200,-1000,-800,-700,-500,-300,-100,0,200,400,500,700,900,1100,1200},
{-1200,-1000,-900,-700,-500,-400,-200,0,200,300,500,700,800,1000,1200},
{-3100,-2400,-1900,-1700,-1200,-700,-500,0,500,700,1200,1700,1900,2400,3100}}
```

GLOBAL PARAMETERS continued:

rec threshold [-40 – 6dB]:

- Set the threshold for one-shot recording to start (see **REC VIEW**).

tempo-map mode [resize, repitch]:
Tracks are **not** tempo mapped by default. All clips are initialized with a 4 second buffer, which corresponds to 1 bar at 60bpm. The length of the clip can be resized according to the clip length settings (see **CLIP VIEW**).

- If tempo-map mode is set to "**resize**", the clips of tempo mapped tracks will be resized according to the clip length setting. For example, if the clip length setting is set to 4/4 (1bar) the clip length will be resized to fit a 1 bar loop at the current system tempo (e.g., 1 bar @ 110bpm = 2.181s). This mode is when you do not want your clips to be re-pitched.
- If tempo-map mode is set to "**repitch**" the speed of the clips of tempo mapped tracks will be set according to the length setting and system tempo. For example, if the system tempo is set to 110bpm the playback speed of a 1bar clip will be 1.83 x faster (fit a 4s loop in a 2.181s bar). Whilst in repitch-mode changing the clip length in **CLIP VIEW** will recalculate and set the playback speed while retaining the actual clip length.

  N.B.: Lower repitch factors will result in lower play-head speeds and the audio quality will be degraded. If you wish to record longer clips in repich mode is best to resize the clip to a longer setting **prior** to engaging tempo-map.

macros:

- **macro slots [split, patterns only, recall only]** specifies how the eight keys are allocated:

  - ▷ **split:** Macro slots 1-4 are patterns, macro slots 5-8 are recalls.
  - ▷ **patterns only:** Macro slots 1-8 are patterns.
  - ▷ **recall only:** Macro slots 1-8 are recalls.

- **recall mode [manual recall, snapshot]** specifies whether recalls are **manual recalls** or **snapshots**.

  - ▷ **manual recall:** Manual recalls behave as in the original mlr script where single key presses are specified and then stored in the according recall slot.
  - ▷ **snapshot:** Snapshots store and recall specific track information for all 6 tracks. A snapshot captures playback state, mute state, playback position, loop settings, speed, reverse and transposition at a specific point in time.

If the macro slots are set to either **patterns only** or **recall only** it is possible to switch between the two settings via the norns interface: press and hold **K1** and press **K2** to switch between the two settings. This key combo only works in **REC VIEW**, **CUT VIEW** and **TRSP VIEW**.

GLOBAL PARAMETERS continued:

midi settings:

- **midi device [device list]:** Set the MIDI device to send MIDI start/stop messages to.
- **midi transport [off, send]:** Set whether MIDI start/stop messages are sent or not. If set to "**send**" a start message will be sent as soon as track playback of any track is started. All consecutive track starts are ignored until a MIDI stop message is sent. To send a MIDI stop message press **STOP ALL**.

track control:

The purpose of this section is for MIDI mapping specific track parameters that otherwise are only available via grid interface. The following parameters can be triggered via MIDI controller once they've been mapped accordingly:

- **track control: playback**, **mute**, **record**, **reverse**, **speed +** (increase speed) and **speed -** (decrease speed). Triggering the corresponding parameters via MIDI controller affect the currently **focused** track.
- **global control: start all** and **stop all**. Triggering the corresponding parameters via MIDI controller affect all tracks.

Individual track control parameters are available and can be mapped under the individual track parameters ***track parameters > track control***.

randomization:

- **randomize @ oneshot rec [off, on]:** If set to "**on**" and "**track select**" is active for a given track (see **REC VIEW**) the specified parameters are randomized after a one-shot cycle is completed.
- **randomize @ step count [off, on]:** If set to "**on**" and "**track select**" is active for a given track the specified parameters are randomized after the number of "grid steps" set in **>>step count**.
- **>> step count [1 – 128]:** Set the number of steps between randomization events for **randomize @ step count**.
- **parameters**: The following section allows the specification of the parameters that are randomized: **transposition**, **volume**, **pan**, **reverse**, **loop-points**, **speed** (octaves) and **cutoff frequency**. The bounds of **speed** (octaves) and **cutoff** can be specified. By default, direction, loop-points and speed are set to "**on**".

N.B.: Track parameters can be randomized manually by holding **ALT** and pressing the **centre SPEED** key of the corresponding track.

GLOBAL PARAMETERS continued:

arc settings:

The arc settings parameters are only displayed if an arc controller is connected.

- **arc orientation [horizontal, vertical]:** Set the orientation of the arc controller (horizontal or vertical).
- **enc1 > start [off, on]:** If on touching the encoder will start playback of the focused track.
- **enc1 > direction [off, on]:** If on, rotating the encoder CCW will set the playback direction to forward and rotating the encoder CW will set the playback direction to reverse of the focused track.
- **enc1 > mod [off, warble, scrub]:** If set to warble, moving the encoder will temporarily speed up/slow down the playback speed of the focused track. If set to scrub, moving the encoder will scrub through the clip of the focused track.
- **scrub sensitivity [1, 10]::** Set the sensitivity of the encoder. Lower values result in less sensitivity i.e., the scrubbing effect is less pronounced (the play-head moves less compared to higher sensitivity values).

SAVING AND LOADING SESSIONS:

- Complete sessions can be **saved** and loaded via norns' pset manager. When a pset is **saved** a folder within ***data/mlre*** is created with the corresponding pset number (e.g., ***data/mlre/01***). Within this folder two files are stored:
  - A ***my_psetname.data*** file which contains all track, pattern, manual recall, snapshot and clip data.
  - The whole **main** buffer as a ***my_psetname.wav*** file (50.3MB).

- When a pset is **loaded** the ***.pset*** file together with the ***.data*** file and buffer are loaded into mlre. While loading all playing **PATTERNS** are stopped. The **REC** and **PLAY** states of tracks are ignored (do not change state).
- When a pset is **deleted** the corresponding directory (e.g., ***data/mlre/01***) with the sored files (***my_psetname.data*** and ***my_psetname.wav***) are deleted.