

REQUANTIZING DIY MIDI SEQUENCER

# USER MANUAL

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dream it yourself

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# 1. Welcome to LoopA!

The midiphy LoopA is a small but powerful DIY requantizing MIDI sequencer with six fully independent MIDI tracks and six scenes for a total of 36 MIDI clips. A crisp graphical OLED displays noteroll information along with powerful live performance tools such as live note requantization, time-based sequence slicing (beatlooping), live transposition, and real-time effects that tap into your creativity!

If you have a soldering iron and mid-level DIY experience, it can be built in a few evenings. An extensive build video tutorial covers each construction step.

The LoopA comes in two case variants - a cheaper but sturdy full acrylic variant, and a “pro variant” proudly made by Hallik Engineering.

The LoopA is small enough to take everywhere and could even be powered by a USB powerbank. Boot-up only takes a few seconds and then it is ready for your next live session! Enjoy!



## 2. Features

- MIDIbox/FreeRTOS (real-time operating system) STM32F4 microcontroller-based application resulting in minimal MIDI jitter/latency
- Responsive and optimized UI for an easy-to-use workflow with a fast learning curve: it is ideal for recording concepts/ideas in your studio and for live performances on stage
- Holds 36 MIDI clips in a matrix of 6 tracks (horizontal) and 6 scenes (vertical)
- Clips contain notes recorded with their original timing, allowing for nearly unlimited polyphony and unquantized storage of about 10 000 notes per session (polyphony is naturally limited by MIDI throughput).
- Overdubbing (adding notes) without erasing existing notes (looper approach)
- Dynamic requantization of notes at any time (including during recording) and real-time application of other LiveFX such as quantized swing and note-skip probabilities
- Clip scrolling, clip length changes, clip zooming/stretching and note transposition at any time (including during recording)
- Two performance modes with a dedicated knob for live transposition and "beatloop", offering different sequence-scrambling time progressions that can completely alter a rhythm or melody line while keeping the harmony and sequence runtime identical to the unaltered version
- Manual sequence scrubbing/time scratching with a dedicated knob
- Dedicated scene progression knob, launching six new clips for song progression
- Data entry with push-to-accelerate rotary encoders: pushing the DATA knob while turning will expedite changes, useful e.g. for moving a note many steps or transposing by many semitones
- High-speed two-key "muscle memory" menu navigation and shortcut SHIFT functions for direct clip launching/track mute/ track unmute access from any screen
- Dedicated clip COPY/PASTE/DELETE keys
- Three DIN MIDI OUT ports and two DIN MIDI IN ports allow direct connectivity of most classic MIDI gear
- Four virtual USB MIDI IN/OUT ports to drive VSTs/software synthesizers and connect to your DAW
- Graphical OLED offering instant live feedback on all operations such as transposition, note probabilities, beatloops and more
- Integrated note editor for editing your sequences without a computer/mouse and to quickly correct recording mistakes
- Full-sized SD card used to store sessions and for data backup
- Light-weight design and a small case fits into any backpack and can be portably powered for hours using a standard USB powerbank
- Very quick boot-up times and automatic last-session recall: continue with your work exactly when inspiration strikes and not after a required operating system software update :-)

- Support for up to two footswitches - customize your LoopA by choosing individual LoopA actions or commands for your footswitches
- Clips can have a length of up to 1024 steps, allowing for loops that are several minutes long before they repeat.

## 3. Quickstart

The following steps get you jamming pronto!

If you get stuck somewhere, please read through the “Menu Usage and LoopA Screens” chapters. These describe every action on each screen in much more detail.

1. Insert a FAT32-formatted SD card into the SD card slot to avoid the diagnostics mode, which is mostly useful to test hardware functions during the build.
2. Attach your LoopA to your favourite synth (synth MIDI OUT to LoopA MIDI IN1 and LoopA MIDI OUT1 to synth MIDI IN)
3. Attach a USB B cable to power up your LoopA (you could use a mobile USB charger, a USB power bank, or just a USB port from your computer)
4. After starting up LoopA, the first track is selected and unmuted (the upper-left key is illuminated blue-green = cyan) and ARM is activated (2nd key in the lower row is illuminated red), we are thus already set up to record a sequence on Track 1
5. Press and hold the MENU key (it might be labeled with a “burger symbol” icon) and push the lower rightmost key to access the TRACK configuration screen, then release both keys, and you see the TRACK screen.
6. Push the second upper-row key to activate the “MIDI Output Channel” selector and use the VALUE knob to choose the MIDI channel of your synth
7. Using the Menu, go back to the MUTE Screen and press RUN/STOP to start the sequencer. The time cursor starts moving, the current track (step or 16th note-equivalent) positions in the lower part of the display are updated
8. While the sequence is running, play a few notes, try to match the blinking beat LED on the RUN/STOP key - when the sequence loops, you should hear the recorded notes in (currently) unquantized playback. If you are unhappy with your current recording, you can press DELETE (lower right key) at any time to start over.
9. Use the lower-left track knob to choose a different active track and watch the blue active-track indicator move across the top six keys. Potentially adjust the output MIDI settings in the TRACK screen as before.
10. Repeat recording a secondary sequence (e.g. a bassline), which will be stacked on top of the playback of track 1.
11. At any time, have a look in the NOTES, CLIP and LIVEFX screens to modify your recording - here you could delete or modify single notes, transpose the whole clip, requantize, apply swing and randomness, change the length of your clip, change the playback speed of notes, time-scroll notes and do many other things! :)
12. Attach more synths (also software synths can be directly driven via the virtual USB MIDI ports) and set them up in the TRACK screen. The “live forward” feature there allows to forward any notes you play on your main keyboard to the configured MIDI

- OUT port/channel of the currently active track, so you could listen to e.g. rackmount synths when using a separate MIDI keyboard for recording.
13. With the SCENE knob, you can cycle through multiple scenes. Use the COPY and PASTE keys to copy clips (that could be then modified or overdubbed) and thus conjure up a simple “song” when progressing through the six available scenes.
  14. Use the LIVE knob to test performance features like live transpose and beatloop. Push it to cycle through those live performance modes.
  15. Push and turn the SELECT knob to scrub (manually scroll the time cursor) through the sequence (while playback is active).
  16. You could also have a look at the TEMPO, SETUP, ROUTER and (MIDI)MONITOR screens to learn more about your LoopA.
  17. If you are lost somewhere, push and hold SHIFT and the HELP key to get context sensitive information.
  18. Once happy with your jam, don’t forget to save it on the DISK screen. If you turn off your LoopA at any time, your last saved (or loaded) session will be automatically fully recalled.

## 4. User Interface Overview

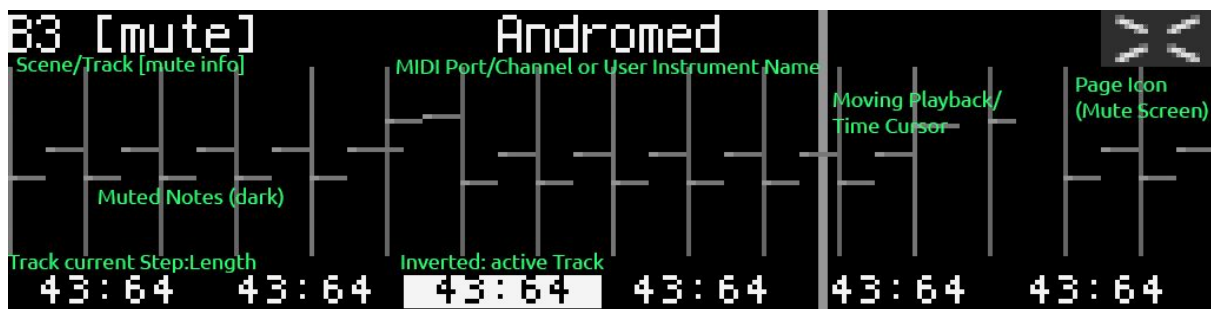
This is the metal case LoopA frontpanel:



The user interface consists of a 256x64 pixel, 16 grayscale-level OLED, four knobs (red) with status indication LEDs around the upper knobs and thirteen keys (blue) organized in two rows, the upper keys are often directly associated with onscreen actions of the currently active screen and the lower keys operate basic functions (e.g. sequencer RUN/STOP) that are available from every screen.

## 4.1 Graphical Display

The display is usually divided into three general sections: a title line providing general information about the active page; a central section most often showing note data (also used for MIDI router or setup configuration data); and a footer line, which “labels” or maps the upper six general purpose keys to actions or settings:



Here the MUTE screen of Track 3, Scene B is displayed, which is currently muted and mapped to user instrument “Andromed” and the current playback position of this clip is step 43 of 64. The sequencer is running, the time cursor is about three quarters “through the sequence” and the lower six tracks are available for muting and unmuteing by pushing the first row of keys.

## 4.2 Encoder knobs

- SCENE**  
 Selects the currently active scene. LoopA has six tracks and six scenes and thus stores 36 MIDI clips in memory. The scenes are enumerated from A to F and the tracks are enumerated from 1 to 6, which can be concatenated to “1A” or similar. This concatenated number consisting of scene number and track number is displayed on most pages in the upper-left corner of the OLED. The nearby LEDs visualize the currently active scene.
- SELECT**  
 Multipurpose knob, but usually selects the active track on many screens. On the note editor page, it selects the edited note; on the config and router screens, it selects the active configuration item. Pushing down the SELECT knob while turning will scrub the playback position,



allowing quick fast-forward or rewinds when the sequencer is running.

- LIVE  
Live performance knob. Pushing the knob switches between two performance modes. The default mode is “live transposition”, where turning the knob will transpose any channels that are enabled for live transposition. When switched to “beatloop”, turning will adjust the position of the playback cursor to repeat or skip beats/measures. Settings are visualized with the nearby LEDs and if neither transposition nor beatloop is active, two illuminate center LEDs will indicate a “zero” effect.
- DATA  
Used for entering command and parameter data. A command/operation is first selected by pushing an upper-row key, then the value is adjusted with the knob. For example, choose the “track length” command from the Clip screen, and then turn this knob to select a clip step length equivalent (e.g. 64 steps). Pushing the knob while simultaneously turning it will usually accelerate inputs (“Accel.”), but is also useful in certain situations to “lock” the input to useful increments. An example is adjusting track transposition in the “clip” screen, where pushing and holding while turning this knob will transpose in octaves rather than semitones.

## 4.3 Status LEDs

Both SCENE and LIVE encoders are partially encircled by status LEDs, which look slightly different in the final LoopA revision (LED color scheme), but are arranged in this orientation:





- The six middle LEDs around the SCENE knob indicate which scene is currently active. An upcoming later feature will allow the LoopA to cycle between the default "full-scene switching" mode (which just jumps to a new scene with six new clips active when you turn the SCENE encoder) and single-clip progression within a track - the upper and lower different-color LEDs are used to indicate that mode - described as "ALL" and "TRACK" respectively on the frontpanel.
- The six middle LEDs around the LIVE knob indicate the parameter value of the currently active LIVE mode. The upper and lower different-color LEDs are used to indicate the live mode type (labeled "TRANSPPOSE" or "BEATLOOP" on the frontpanel), which can be switched by just pressing the LIVE encoder.

## 4.4 Keys

- The upper row of six keys typically controls actions displayed in the bottom line of the OLED. In many screens, these keys choose parameter/value selectors or toggle between states.



In the often-used MUTE screen, pushing one of the six keys mutes or unmutes one of the six tracks (unmuted tracks are also illuminated in green). The currently active track is indicated with a blue backlit key. Therefore, if a track is both active and unmuted, this leads to a cyan color mix (green and blue); see track three in the above picture.

- The lower row of seven keys are per default mapped to these functions (from left to right):
  - \* RUN/STOP: Start or stop the sequencer
  - \* ARM: Enable recording to the current track
  - \* SHIFT: Press and hold to display shift menu
  - \* MENU: Press and hold to display the page/screen selection menu

- \* COPY: Copy active/selected clip to memory buffer
- \* PASTE: Paste memory buffer to active/selected clip
- \* DELETE: Delete notes on active/selected clip

Most keys perform direct actions. Press and hold MENU or SHIFT to directly choose the desired secondary action or page/screen. An onscreen keymap then displays the actions of the remaining twelve keys (see SHIFT and "Menu Usage" chapters).

## 5. The SHIFT Function

The SHIFT key provides access to shortcuts and additional screens:



- Hold SHIFT: shows the muted/unmuted state of the current track clips and to what scene they are assigned (see above screenshot).
- Hold SHIFT + press upper-row keys 1-6: measure-synchronized direct mute/unmute of any track from any screen. This allows ease muting/unmuting/launching of clips from every screen.
- Hold SHIFT + press and hold ARM: Display context-sensitive help screen describing the functionality of the currently active screen
- Hold SHIFT + press LIVE knob: resets the currently active live mode parameter to zero. E.g. if you are in "live transpose" mode and have transposed a few clips, push the knob to reset transposition.

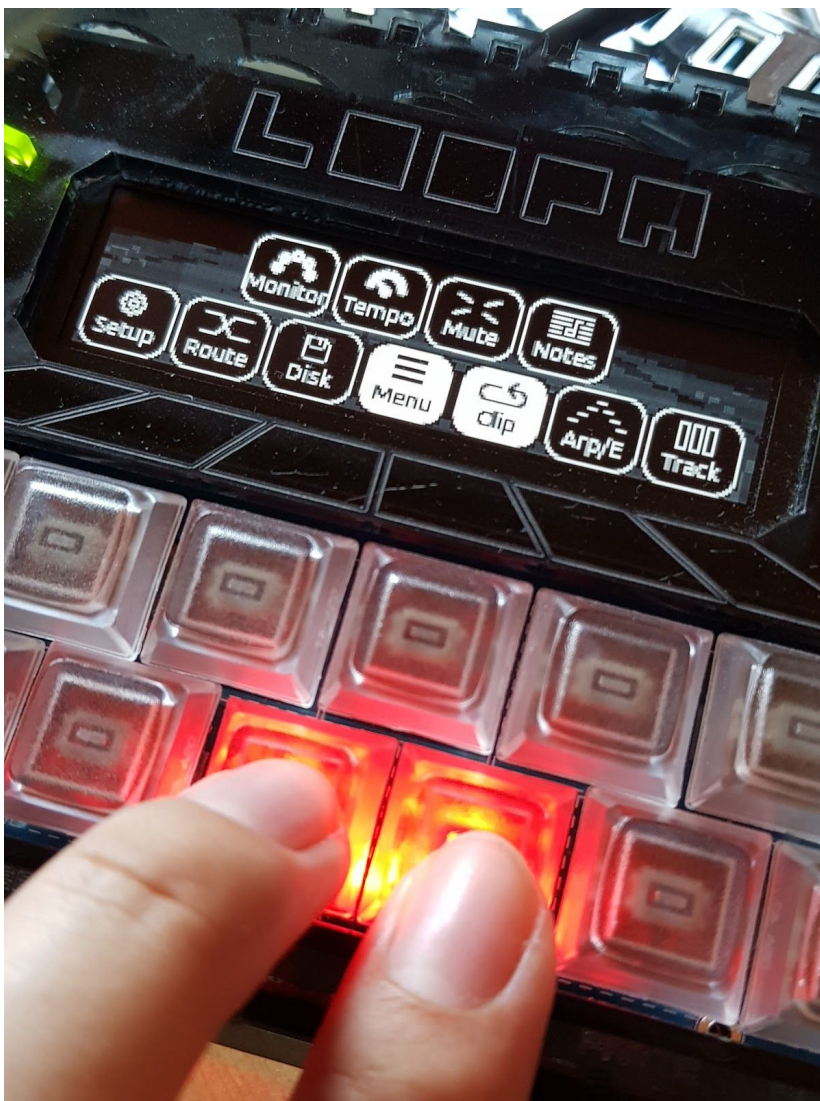
You can then push the knob again to revert back to the previous value. Use this to toggle between a nice transposition or beatloop value and no effect. These "toggle" buffers are also stored in the session file. So you could save a session with "zero" transposition, but a nice preset toggle transposition and activate it by pressing SHIFT + LIVE knob.

## 6. MENU Usage and LoopA Screens

LoopA offers a two-finger navigation menu system allowing for quick one-handed navigation utilizing “muscle memory” shortcuts to access often-used screens.

Navigate to the “Clip Settings” page by pushing and holding the menu key and pressing the Clip key, then release both keys.

All available pages are displayed on the OLED and the corresponding pressed keys are backlit in red.



## 6.1 SETUP Screen

Within the SETUP screen, basic runtime parameters of the LoopA can be modified. Changes are directly saved to the SD card file called "setup.txt", which can also be edited manually in a text editor. To move an active configuration over to another LoopA, copy this file to the new SD card root.



In the setup screen, use the lower-left SELECT knob to scroll through the configuration items and to select an active item. Use the upper-row keys below the OLED to select parameter values and either simply "toggle" them by pushing the respective upper-row key (e.g. toggle Beat LEDs "on" or "off"), or if a value is selected, use the lower-right DATA knob to change settings (e.g. change the OLED Screensaver activation time).

### 6.1.1 Configurable Setup Parameters

Here is a list of configurable setup parameters:

- **System Font:** changes the system font from a normal/sharp system font (type "a") to a smoother, antialiased system font (type "b")
- **Beat LEDs:** when enabled, repurposes the lower-right four key backlight LEDs to display beat and quarternotes
- **Beat Display:** when enabled, slightly flashes the OLED display background to match measure and beat
- **Screensaver:** activates the LoopA screensaver (a voxelspace mountainscape scrolling by) after a defined number of minutes
- **Invert OLED:** a possibility to invert the normally black OLED, can be used in conjunction with white metal cases. In this case, the OLED will cause a slightly higher power draw
- **Metronome:** defines a MIDI synth to use as a metronome with a configurable MIDI port/channel (or a user instrument, see below) and define the notes to be played when a measure and a beat begins

- **Tempo Up/Dn:** defines the tempo rate of change when the "Faster" and "Slower" buttons are pressed in the "Tempo" screen. Five preconfigured rates of change are available to allow linear tempo fades with different speeds
- **Inv Footsw.:** allows to software-invert any footswitch type (normally closed, normally open) you have - using this function you can even use two different-type footswitches with your LoopA.
- **Footsw 1. & Footsw. 2:** Allows to map any of these functions to your footswitches:
  - "CursorErase": Holding down the footswitch using CursorErase allows overwriting clip notes under the time cursor. Allows for live re-recording of new notes while the sequencer is running.
  - "RunStop": starts/stops the sequencer
  - "Arm": arms/disarms the sequencer
  - "ClearClip": clears the currently active clip
  - "JumpToStart": if the sequencer is running, moves the time cursor to the sequence start
  - "JumpToPrecount": if the sequencer is running, jumps to a "count in position", one measure before the end of the currently active clip, thus simplifying re-recording the next loop of the clip.
  - "Metronome": Toggles the metronome
  - "PreviousScene": Jumps to the previous scene
  - "NextScene": Jumps to the next scene
  - "PreviousTrack": Switches the active track to the previous track
  - "NextTrack": Switches the active track to the next track
- **Inv. MuteLED:** if activated, the track mute LEDs in the MUTE screen will be illuminated when a track is muted and will be off when a track is unmuted
- **Track Switch:** normally you would just selecting the active track with the SELECT knob, but here you can also enable track switching by "long pressing" mute keys in the MUTE screen. If configured and if you hold down a mute key long enough (0.2 or 0.4 seconds), then the respective track will be selected.
- **Follow Track:** you can configure LoopA to follow unmuted or muted tracks, making them active tracks. The feature can also be disabled.
- **LED Notes:** if enabled, your LoopA will visualize played notes in the mute screen by temporarily illuminating the respective track keys red. This can be helpful to determine which track plays the music :).
- **MCLK IN/OUT:** toggles MIDI clock input and output devices, where DIN are standard MIDI ports and USB are virtual USB devices. Be careful to not accidentally create a MIDI clock loopback, which might occur if other devices are echoing the MIDI clock back to the LoopA and the receiving input port is configured as the MIDI clock master

All settings within the setup.txt file can be edited by opening this file on a plain text editor. Certain sections are not (yet) editable within LoopA itself. The "INSTRUMENT" entries, for example, are described in the next section.

## 6.1.2 Defining Named User Instruments

Upon opening setup.txt in a text editor, 32 lines are available to define very helpful “user instrument” abbreviations.

By default, the user instruments are disabled and enumerated as follows:

```
INSTRUMENT 0 Synth_A OUT1 0
INSTRUMENT 0 Synth_B OUT1 0
INSTRUMENT 0 Synth_C OUT1 0
...
```

The INSTRUMENT identifier is followed by the instrument number (0-31), a string of up to eight characters for the synth or device, and the output port and channel. Named User Instruments can be assigned to any output port, including USB ports.

Transform these lines by using a computer text editor to reflect a custom instrument/synth setup. LoopA can therefore use “instrument names” instead of otherwise cryptic MIDI port/channel combinations:

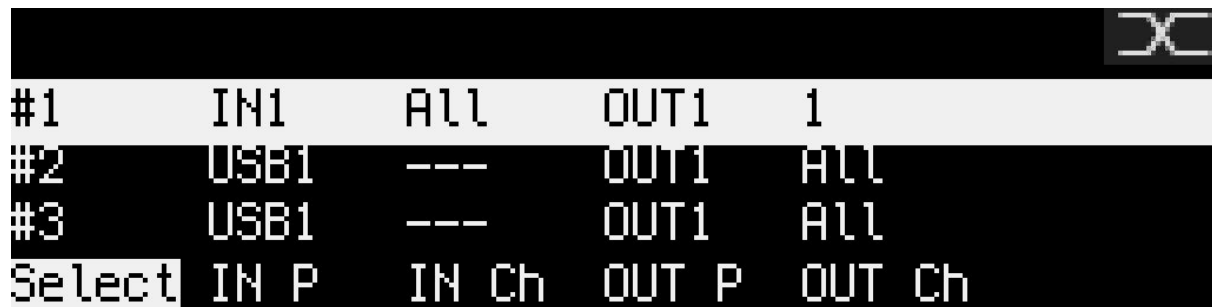
```
INSTRUMENT 0 Andromed OUT1 1
INSTRUMENT 1 Dominion OUT1 2
INSTRUMENT 2 MoogLP OUT1 3
INSTRUMENT 3 Anushri OUT1 4
INSTRUMENT 4 ESQm OUT1 5
INSTRUMENT 5 EX8000 OUT1 6
INSTRUMENT 6 K3M OUT1 7
INSTRUMENT 7 uWave1 OUT1 8
...
```

E.g. in line 2 (“INSTRUMENT 1”), a synth called “Dominion” is configured to use MIDI OUT1, MIDI channel 2. Once a MIDI channel other than “0” is defined, the respective instrument is enabled. Always start with INSTRUMENT 0 and never leave a gap between instruments, as LoopA will stop scanning for further user instruments after encountering an output channel of “0”).

## 6.2 MIDI ROUTER Screen

The ROUTER screen defines up to 16 permanent routing paths between LoopA and any connected MIDI equipment. For example, forward a MIDI controller connected to IN1 (accepting all channels) to a synth connected on OUT1 and transform the output channel to channel 1:





#1	IN1	ALL	OUT1	1
#2	USB1	---	OUT1	ALL
#3	USB1	---	OUT1	ALL
Select	IN P	IN Ch	OUT P	OUT Ch

MIDI packets can also be forwarded to (or sent from) a virtual USB port (when connecting LoopA to Windows 10 or Mac OS via USB. Four independent MIDI USB devices are added and could redirect MIDI traffic around a studio.

The router screen offers “commands” that can be selected with the upper-row keys directly below the OLED:

- Select: Select currently active “route” (also select routes by turning the SELECT knob).
- IN P: Choose the input port of the active route (IN1-IN4, USB1-USB4). Only MIDI packets arriving on this port will be forwarded to the configured MIDI output
- IN Ch: Define the input channel of the active route (1-16 or “All”). If a specific channel is chosen, only MIDI packets on this channel will be forwarded to the configured output.
- OUT P: Define the output port of the active route.
- OUT Ch: Define the output channel of the active route. If a numeric value is chosen, the packet is sent only on this destination channel. If “All” is selected, the input channel number will be used (and is not modified).



## 6.3 MIDI MONITOR Screen

The MONITOR screen shows current MIDI traffic from an interface perspective as well as a short hexdump log:

```

USB1 USB2 USB3 USB4 IN1  IN2  IN3  IN4
SysEx USB2 USB3 USB4 OUT1 OUT2 OUT3 OUT4
11236781 USB1 -> 04 00 05 06 73 73
11236781 USB1 -> 04 00 05 06 64 0a
11236781 USB1 -> 05 00 07 0f 00 00

```

The above image displays outgoing SysEx traffic on USB1, with three log lines of MIDI packets sent at the timestamp 11236 (seconds), 781 (milliseconds). The output port is the USB1 virtual MIDI port (-> arrow) and the hexadecimal string is the actual transmitted data.

## 6.4 DISK Operations Screen

Save and load Sessions to/from SD card using the disk operations screen:

```

Disk Operations
Session 14
(on disk)
Select Save Load New

```

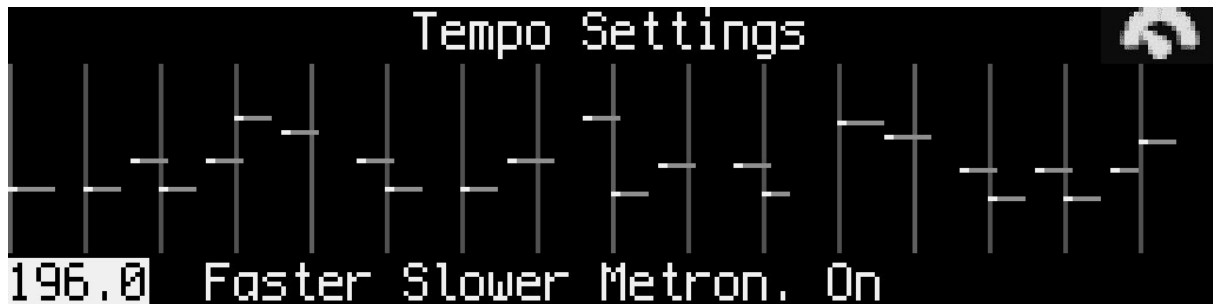
Scroll through the enumerated sessions with the lower/left SELECT knob (accessed by number). Upper-row key #2 saves the current session to disk, upper-row key #3 loads a session from disk (if it is present), and upper-row key #4 initializes a completely new session, deleting all track and note data.

LoopA will remember the last session loaded or saved upon restart.

Copy the relevant files in the SESSIONS directory on the SD card to backup sessions.

## 6.5 TEMPO Screen

Controls the current playback speed and configures a MIDI metronome for a recording guide or click track:



Press upper-row key #1 to select the current BPM to be modified with the DATA knob.

**Tip: push and turn the VALUE knob for accelerated speed adjustments.**

The FASTER and SLOWER commands modify the tempo linearly (and slowly), while the keys are pressed.

The METRONOME (Metron.) switch activates a midi metronome that plays different notes at full measures and at beats. Configure the metronome in the SETUP screen: define which output port the MIDI metronome notes are sent to and which notes should be played when a full measure or a full beat is reached.

## 6.6 MUTE Screen

The MUTE screen could be considered the most important screen of the LoopA. If clips in the CLIP/NOTES/LIVEFX screens aren't being modified (see below), the MUTE screen provides a good overview of the sequences and allows clips to be quickly recorded, muted and unmuted:



The above screenshot displays a 64-step sequence with stored note data track 6, scene "E", shortened to "6E". The output port is USB4 MIDI port, channel 8.

The six upper-row keys launch/unmute clips of the currently active scene or stop/mute them again. Muting and unmuting is always synchronized to a measure, so can be "pre-unmuted" in advance and the clip will be launched with perfect timing.

Recording a sequence is most comfortable from the MUTE screen, as the active track is easily chosen and (also visualized by the blue upper-row key and also the inverted sequence position display; see the screenshot above). Press ARM and record any set of notes with a MIDI keyboard, MIDI drumpad or another instrument.

The lower six number slots show the current sixteenth-note-equivalent playback positions and clip lengths for all six LoopA tracks. A display of 09:64 would mean that playback is at step (or sixteenth note) 9 of a total clip length of 64 steps (or sixteenth notes).

The top-left of the mute screen displays the currently active track and scene. If the LoopA is armed, notes will be recorded to this track within the shown scene.

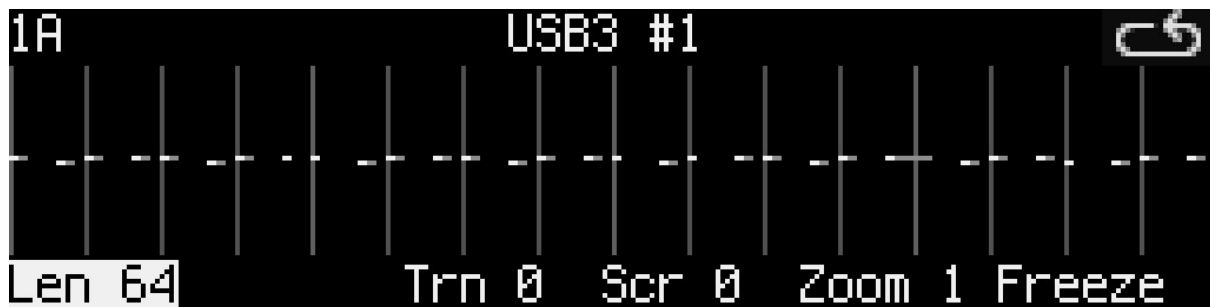
In the center top line, the output instrument of the currently active track is displayed. If the track was set up to use a user instrument (see chapter: SETUP Screen), a custom instrument may be displayed (e.g. "ANDROMED"). If not, the MIDI output port and MIDI channel are displayed instead (e.g. USB4 #8).

In the setup screen you can configure the "Track Switch" option to be able to directly switch to any track by pressing and holding the respective upper row key. There you can

also configure the "Follow Track" option to automatically switch your active track to unmuted or muted tracks (or disable that function).

## 6.7 CLIP Screen

The CLIP screen configures/modifies all of LoopAs 36 stored clips.



The active clip is displayed in the top-left corner (e.g. 1A corresponding to track 1, scene A). The following operations are available on the top row of keys:

- Key 1 (Len) allows to set the clip length. The length can always be reconfigured without losing notes, even with the sequencer running. Available clip lengths are 4, 8, 16, 32, 64, 128, 256, 512 and 1024 steps.
- Key 2 is currently without function but reserved for the clip type for a later LoopA revision.
- Key 3 (Trn) transposes the whole clip. Tip: when this operation is active, press the DATA knob and turn to transpose full octaves. This is handy during live performance.
- Key 4 (Scr) scrolls the track notes forward and backwards, wrapping around at both ends.
- Key 5 (Zoom) zooms in the notes. For example a zoom of 0.5 speeds up the sequence by a factor of 2.
- Key 6 (Freeze) will reset all clip parameters to zero while keeping all notes in their current place. It will also delete "offscreen" notes (e.g. if the sequence length was reduced). Use this command to define an order to otherwise unordered chained transformations. Example: there is a difference between scrolling, freezing and changing the zoom level to first changing the zoom level, freezing and afterwards scrolling.

## 6.8 NOTES Screen

The NOTES screen allows adjustment of individual clip notes, e.g. to correct minor recording mistakes, or to adjust timing, length or velocity of sequence notes:



Use the lower-left SELECT knob to choose the currently active note. A small dotted cursor is drawn around it.

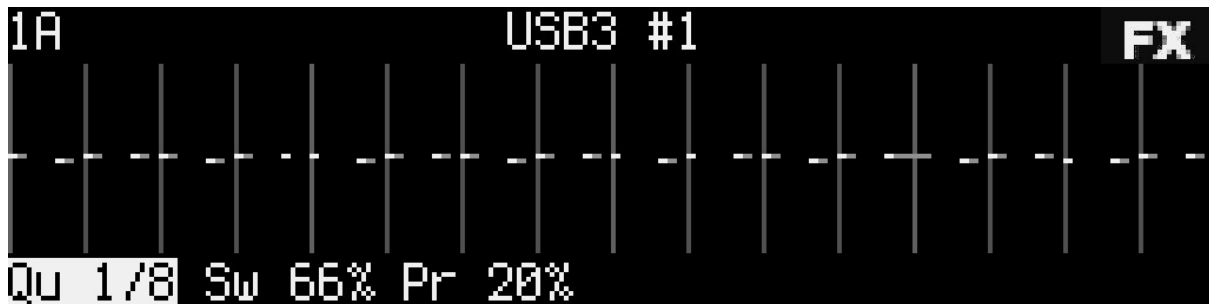
These operations are available on the top row of keys:

- Key 1 (Pos): horizontally adjust the note or correct its timing. Pushing the DATA knob while turning will accelerate inputs, for instance to easily move a note longer distances in the sequence.
- Key 2 (Note): adjust the note itself; here D#3 is shown, which could be adjusted to any other MIDI note using the DATA knob.
- Key 3 (Vel): adjust the velocity of the note -- the individual note will be muted at velocity value 0.
- Key 4 (Len): adjust the length of the played note relative to the recorded note length.
- Key 6 (Delete): completely delete a note.

**Tip: before undertaking extensive note editing, push COPY to store a copy of the clip in the buffer. If editing goes wrong, press PASTE to undo.**

## 6.9 LIVEFX Screen

Use LiveFX functions to alter clips with effects designed for live performance:



These operations are selected with the top row of keys and modified with the DATA knob :

- Key 1 (QU) dynamically (re)quantizes clip notes to defined note lengths. In this example a simple drum clip was requantized to 1/8th notes.  
**Tip: use requantization to alter the rhythmic structure of sequences. E.g. if the above clip was requantized to 1/4th notes during playback, the audible speed of the rhythm sequence would halve.**
- Key 2 (SW) introduces swing to quantized clip notes. Swing is applied to every second quantized note. A swing setting of 50% indicates that no swing is applied and the note should stay at its quantized position. Swing values >50% (such as 66% in the example above) push every second quantized note forward in time up to the next quantization point, and swing values <50% push the note backwards in time.  
**Tip: 32/33% or 66/67% swing settings enable triplet swing timing**  
**Tip #2: The swing effect sometimes changes dramatically with only slightly altered BPM, try it out!**
- Key 3 (PR) introduces non-zero note-skip probabilities. These are visualized as a randomly blinking note-cloud. A note-skip probability of 100% would mute all notes in the sequence.  
**Tip: A low note-skip probability of a few percent can spice up otherwise static drumloops**  
**Tip #2: Use note-skip probabilities in a live performance to "break up"/"fade out" a sequence. It is especially fun to use on polyphonic/chord sequences! :)**

## 6.10 TRACK Screen

A track usually represents an "instrument" with the six vertical scene clips in a track representing variations of melody lines or drum patterns. The following TRACK screen is an example of such a MIDI instrument setup:



These operations are available on the top row of keys and can be adjusted with the DATA knob:

- Keys 1 and 2 respectively define the MIDI port and MIDI channel LoopA should send MIDI notes to for the current track. Four virtual USB ports are also available that could be mapped to software instruments (e.g. VSTs) on a computer.  
**Highly recommended tip: Turn the DATA knob further to display user instruments with custom naming e.g. "ANDROMED" instead of cryptic OUT1/Channel 1 combinations. Read the SETUP page chapter for more details.**
- Keys 3 and 4 respectively define the input MIDI port/channel associated with the current track. The default value of "All" will recognize any input from any MIDI IN ports including virtual USB ports. Use this to filter the incoming MIDI stream.
- Key 5 (Fwd) enables live-forwarding of received MIDI note data on the current track. This is essential if a non-tone-generating MIDI keyboard is attached to an input port, and a software/hardware synth is attached to the configured MIDI output port. This way MIDI data is echoed to the synth, **only if the track is active**. This feature allows enables auditioning of multiple rack/keyboardless synthesizers with only a single master keyboard. Turn the SELECT knob to cycle between tracks with this feature enabled.
- Key 6 (LTr) enables and disables live transposition of the current track. Live transposition is performed with the upper-right LIVE knob and enables measure-synchronized transposition of all tracks that have this feature enabled (LTr On).  
**Tip: Disable live transposition on drum tracks. MIDI notes are typically mapped to specific notes and transposition would probably result in unwanted drums being played (though some interesting effects might result!).**



## 7. Live Performance Modes

LoopA supports two live performance modes. The upper-right LIVE performance knob can be pushed to cycle through these modes. The active live performance mode will be displayed with LEDs close to the LIVE knob. Turning the live performance knob changes the respective live performance value as displayed by differently colored LEDs nearby.

### 7.1 Live Transposition Mode

In live transposition mode, LoopA will transpose any tracks that have LTr ON (live transposition set to on) in their respective TRACK page. It makes sense to disable live transposition for drum tracks in most cases. Jump through preset transpositions by turning the LIVE knob to transpose by +5, +7, +12 (and so on) semitones in the positive range and -5, -7, -12 (and so on) in the negative range.

The LEDs around the LIVE knob will indicate the current live transposition value. Live transpositions are always time synchronized to the next measure (if the sequencer is running).

**Tip: Push SHIFT and press the LIVE knob to quickly switch back from a set live transposition value to zero live transposition. Push SHIFT and press the LIVE knob again to cycle back to the previous transposition value. This live transposition value is also saved to the session, so can be used to store and toggle a nice live transposition setting when loading another session.**

### 7.2 Live Beatloop Mode

If beatloop mode is engaged, one of 14 time-scanning algorithms is chosen by turning the LIVE knob. The currently active algorithm is visualized with the LEDs near the LIVE knob.

During playback, the time progression cursor will progress differently and non-linearly for each algorithm, try it out! Some algorithms repeat previous measures or beats, some scan forward or skip measures and some continue to play back the sequence with identical runtime with wild jumps applied to the time cursor.

**Tip: Try "scrambled" beatloop mode with simple melody lines to get completely new melodies while keeping harmonies intact. After finding a nice beatloop value, toggle between this value and "zero beatloop" by repeatedly pressing SHIFT and pressing the LIVE knob.**

**Tip #2: Try "repetition beatloops" of increasingly shortened repeat time (first a measure, then a beat, then a sixteenth note) to create a flam/drumroll effect that can be released by resetting the beatloop with SHIFT plus a press of the LIVE knob.**

## 8. What's New?

In case you have been using the LoopA for a while and wonder which changes were introduced in newer software revisions, have a look here:

### V2.06 (released on 2020/04/15):

- Now supporting 256, 512 and 1024 step-equivalent clip lengths (previous limit was 128)
- Fixed settings (e.g. metronome config) mattias key illumination bug (thanks, Eugene!)
- Illuminate SHIFT-ABOUT and SHIFT-HELP keys in red when they are pressed
- Fixed a bug with "hanging" illuminated matias setup-screen LEDs, when navigating away from the setup screen in the menu (Thanks, Eugene!)
- Enabled respective button highlighting, when copy/paste/delete keys are pressed
- Enabled run/stop beat LED flashing to flash red on full measure, green on beat
- Fixed 0xFA MIDI clock start command, that was sent twice on run/stop sequencer start (Thanks, Eugene!)
- Improved display responsiveness/refresh rate, if the LoopA core is not under load
- Improved initial BPM/timing stability, just a after a sequence was started (Thanks Michael!)
- Enabled frontpanel LED outputs for MIDI activity on IN1/IN2/BLM ports
- New option "Inv. Footsw": software footswitch inversion support to support both types of normal/inverted footswitches.
- Added customizable footswitch functions: choose any two of "CursorErase", "RunStop", "Arm", "ClearClip", "JumpToStart", "JumpToPrecount", "Metronome", "PreviousScene", "NextScene", "PreviousTrack", "NextTrack"  
Holding down the footswitch for CursorErase allows "overwriting" clip notes under the time cursor, this allows for live re-recording of new notes while the sequencer is running. JumpToPrecount allows jumping to a count-in point of a sequence, pushing the footswitch thus simplifies re-recording of a clip.
- New option "Inv. MuteLED" to invert mute LEDs (Thanks, Michael!)
- New option "Track Switch": when enabled, "long-pressing" a mute key switches to that track. With configurable key hold time in the setup screen. (Thanks, Eugene!)
- New Option "Tempo Up/Dn": Configurable BPM delta speed (faster/slower buttons)
- New Option "Follow Track": automatic track following when muting/unmuting, can be set to "disabled"/"when unmuting"/"when muting or unmuting" (Thanks, Eugene!)
- New Option "LED Notes": visualizes played notes via temporarily red illuminated track buttons in the MUTE screen - when the sequencer is running, this indicates which track is actively playing notes.

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