Click here to display the navigation bar

Back to main page...

MIDIbox SEQ V4

User Manual --- Menu Pages

Edit Page

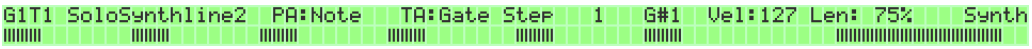
This is the main page which is visible after startup. From any other menu page you can always go back to this page by pushing the EDIT button.

The **upper line** shows following informations:

- **G1T1:** the group/track number (1,2,3,4) which is displayed in most menu pages at upper left corner. If multiple groups and/or tracks are selected, a M is displayed instead of the number. The track group can be changed in the PATTERN menu, with the TrackSel (F4) button or with the 4 optional GROUP buttons (not part of the original MBSEQ V2/V3 frontpanel, but part of the MIDIbox SEQ V4 panel)
  The track can be changed with the 4 TRACK buttons
- **Chn 1/Def:** the MIDI channel and MIDI port to which the track is sending.
- **A:Note:** the active layer (A,B,C,..P), and the parameter which is assigned to the layer.
  The parameter layer can be selected with the 3 LAYER buttons. Layer C button either toggles between C and D, or it shows a selection page for all parameter layers if the track is partitioned for more than 4 layers.
- **A:Gate:** the active trigger layer (A,B,C,..H), and the trigger function which is assigned to the layer
  The trigger layer can selected with the TrgSel (F3) button, or with the optional Trigger Selection buttons which are part of the MIDIbox SEQ V4 frontpanel.
- **Step:** the step number which is currently edited (1..256)
- **G#1 Vel:127 Len: 75%:** informations about the MIDI event which is sent by the selected step. It differs depending on the event assigned to the step, e.g. for a chord step the name of the chord will be displayed, for a CC step you will see the CC number and value.
  A new step is selected when the appr. rotary encoder is moved or by pressing the appr. GP button.

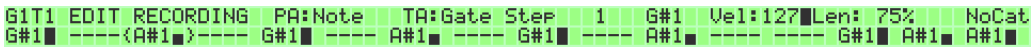
Alternatively, each track can get an individual name and category which are displayed at the upper display line. In this example, the name "SoloSynthline2" and the category name "Synth" has been choosen. Name/Category can be edited in the Event menu.

The **lower line** shows the values of 16 steps within the selected track view and parameter layer. They can be directly modified with the 16 GP rotary encoders below these items. The displayed parameter of the step changes with the active layer. E.g. in layer C the gatelength is controlled, which is visualised with vertical bars:



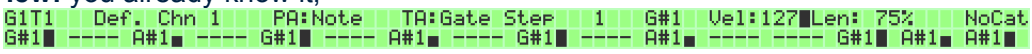
Press&hold a GP button to change into **EDIT RECORDING** mode. Incoming MIDI events will be recorded into the selected step as long as the parameter layer configuration is matching, and layers are free. E.g. it's possible to record MIDI Notes, CCs, PitchBender, Program Change values. The step

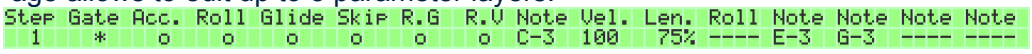
will be framed by curly brackets to indicate the mode:

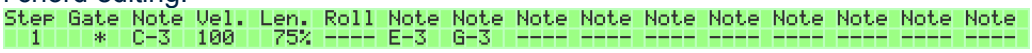


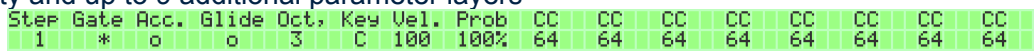
EDIT recording can also be toggled on/off with the SELECT button. This allows you to keep this recording mode enabled while no GP button is pressed (useful if you want to enter chords with two hands). Select the step into which the events should be recorded with the datawheel.
Note1: if recording isn't working as expected, check the recording configuration by pressing EDIT+GP12. At the right side of the page the MIDI port and channel to which the recording function will listen has to be selected.
Note2: EDIT RECORDING always behaves like a step recording (not like a live recording) regardless of the configuration in the JAM page. Live recording is only active while you are in the JAM page!
Note3: EDIT RECORDING is the most simple way to enter chords into the parameter layers!

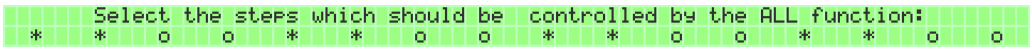
Press&hold the EDIT button to open a special page which allows to select different view modes:

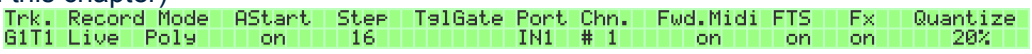
- **Step View:** you already know it;
  

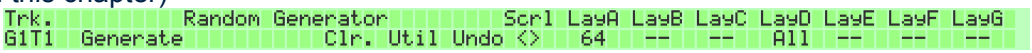
- **Trigger View:** left page allows to select the step, Gate, Accent, Roll, Glide, Skip, Random Gate and Random Velocity.
  Right Page allows to edit up to 8 parameter layers.
  

- **Layer View:** allows to select the step, Gate and up to 14 parameter layer. Especially nice for custom chord editing.
  

- **303 View:** provides a 303ish interface to select the Step, Gate, Accent, Glide, Octave, Note, Velocity and up to 9 additional parameter layers
  

- **Step Select:** allows to enable/disable the steps which are controlled by the ALL function. E.g., with the pattern below, only steps 1,2,5,6,9,10,13,14 (plus the edited step) will be changed if the ALL function has been activated:
  

  If the track consists of more than 16 steps, the selection pattern will be applied on each step view.
- **Record Config:** enters the Recording configuration page (see detailed menu page description later in this chapter)
  

- **Random Generator:** enters the Random Generator page (see detailed menu page description later in this chapter)
  

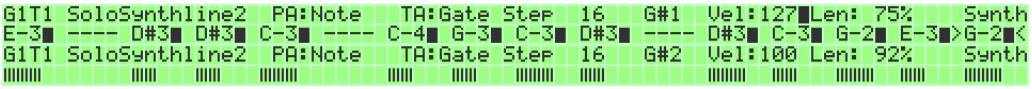
- **Euclid Generator:** enters the Euclidean Rhythm Generator page (see detailed menu page description later in this chapter)
  

Gatelength

The gatelength parameter needs some additional explanations, as it not only allows to set the length

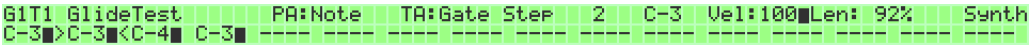
of a note, but also to trigger a glide (overlapping note) and to play an event multiple times.

The Length can be adjusted from 0% to 100% in 96 steps.

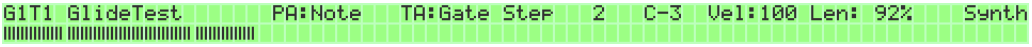


In following audio example, the gatelength of all steps is varied with a single rotary encoder - this can be achieved by pushing the ALL button:

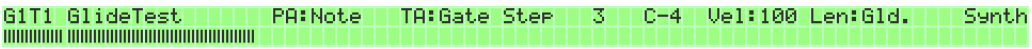
The next example demonstrates the usage of the glide function. The track length is reduced to 4 steps. Following notes are played with a fixed gatelength of 92%:



Later, the length will be set to "glide" at step 2 - this note will overlap the next note at step 3 in order to trigger a Glide on synths which support "fingered portamento" or "SusKey"



Finally glide will also be activated on the third step:



It sounds like demonstated in this MP3 sample:

Drum Edit Page

If a track is configured for drum mode, the edit page changes to a special view which doesn't show the Note names anymore, but small icons instead:

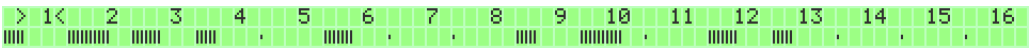
Up to 16 drum instruments can be triggered per track. You can change to another instrument by pressing the TrgSel (F3) or TrgLayer C button:

This page shows animated VU meters for each instrument (to give you an overview about the played instruments), and allows you to select the instrument with GP buttons.

The name of the selected drum instrument is displayed at the right upper corner of the edit page:

Track Selection Page

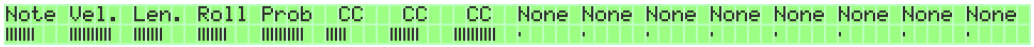
The track selection page shows animated VU meters for each track to give you an overview about the track activity. In addition, it allows you to select one or more tracks by using the GP buttons:



Parameter Selection Page

By pressing the ParSel button (or ParLayer C button if the track is partitioned for more than 4 layers), the parameter selection page will be displayed which shows VU meters for each layer. By pressing a

GP button a parameter layer can be selected for editing:

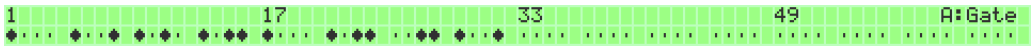


Trigger Selection Page

Each track provides 8 trigger layers, which can be selected by pressing the TrgSel (F3) or Trigger Layer C button:

Step Selection Page

The StepView (F2) Button changes to a zoomed view of the edit page to give you a nice overview (if the track is configured for more than 64 steps, the dots for each step will be smaller). Use the GP buttons to change to another step view:



Track Event Configuration (Shortcut: MENU+GP Button #2)

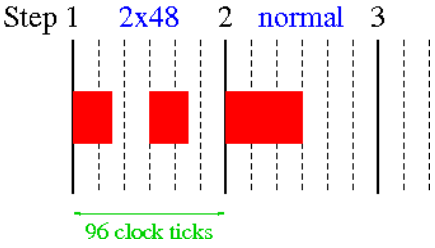
Allows you to change the basic track setup: the type of MIDI events which should be sent by the track to a specific MIDI Channel and MIDI Port.

- **Track Type (Partitioning):** each track has a step memory of 1024 bytes, and a trigger memory of 2048 bits. There are predefined modes which simplify the partitioning of the available memory to free assignable parameter and trigger layers.

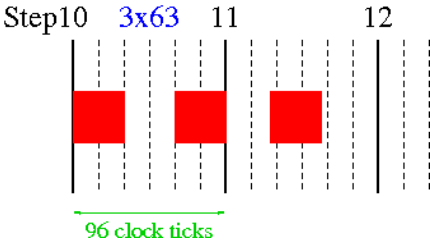
Mode	Steps	Parameter Layers	Trigger Layers	Instruments
Note	64	16	8	1
Note	128	8	8	1
Note	256	4	8	1
Chord	64	16	8	1
Chord	128	8	8	1
Chord	256	4	8	1
CC	64	16	8	1
CC	128	8	8	1
CC	256	4	8	1
Drum	64	1	2	16
Drum	128	2 (32 steps only)	1	16
Drum	128	1	2	8
Drum	256	2 (64 steps only)	1	8
Drum	64	1	1	16
Drum	128	1	1	8
Drum	256	1	1	4

- Parameter layers can be assigned to following functions:
  - **None:** the parameter layer has no function.
  - **Note:** controls the key and octave of a step. Notes can be assigned to multiple layers for polyphonic playing.
  - **Chord:** a chord is generated instead of a single note. 32 chords are predefined and can be transposed by +/- 2 octaves. All notes are aligned to C scale, the track transpose

function has to be used to play different scales.
    - **A-C:** Major I, Major II, Major III (transposed variants)
    - **D-F:** Root note, 3rd note, 5th note (single notes)
    - **G,H:** Root+3rd, Root+5th
    - **I-N:** Maj6, Maj7, Maj8, Maj9, Maj10, Maj12 (4-note chords)
    - **O,P:** Sus4 and Maj+
    - **a-c:** Minor I, Minor II, Minor III (transposed variants)
    - **d-f:** Root note, 3rdMin note, 5th note (single notes)
    - **g,h:** Root+3ndMin, Root+5th
    - **i-n:** Min6, Min7, Min8, Min9, Min10, Min12 (4-note chords)
    - **o-p:** Co7 and Min+
- **Velolcity:** controls the velocity value for all notes/chords of the instrument.
- **Length:** controls the gatelength of all notes of the instrument
- **CC:** plays a selectable CC number.
  CC#128 (displayed as "off") is initialized by default for each layers. With this CC assignment, no events will be sent, which means in other words, that a valid CC number has to be selected with one of the GP encoders 11..13 to send something. Note also, that after the CC has been selected, one of the GP buttons 11..13 has to be pressed to confirm the CC number change. This handling ensures, that no unintended CCs will be sent while the CC number is changed.
- **Pitch:** sends a PitchWheel event
- **Prob:** sets the probability that the step will be played (1..100%)
- **Delay:** delays the step for 1..96 microticks
- **Roll:** plays the step 2..5 times with ascenting/descenting velocity (intensity: 0..15). 127 variations are available - great for drum patterns!
  The distance between the repeats is predefined to: 48 ticks on 2 repeats, 32 ticks on 3 repeats, 36 ticks on 4 repeats, 32 ticks on 5 repeats.
- **Roll2:** plays the step 2..5 times. Instead of velocity the distance between the steps can be directly controlled.
  The first number means, how often the event will be played (2, 3, 4 or 5 times), the second number specifies the number of clock ticks between the events (accuracy depends on number of repeats). Examples:



One step consists of 96 clock ticks. With the 2x48 setting the note will be played at the beginning and in the middle of the step.



With 3x63, the note will be played three times with a distance of 63 clock steps - at 0, 63 and 126. A delay of 126 crosses the step range of 96, so that the last note slips into the range of the second step. This sometimes results into nice, unexpected grooves! :-)

In following example, various roll2 parameters are used for the snare drum. Here a screenshot of the 32 step sequence (which is played 2 times):

- **Nth1 and Nth2:** this powerful feature has been suggested by Pawaga in the MIDIbox forum, it allows to create long variant patterns which change based on mathematical rules.
  A special action will be triggered on each nth bar (Nth1) starting at the 1st bar, or after nth bars (Nth2).
  For example for a 4 step sequence "CGDF" with Nth1 values "Pl1, Pl3, Mu3, Pl4" would result into:
    - **Bar 1:** CG-F
    - **Bar 2:** C-D-

        - **Bar 3:** C-D-
        - **Bar 4:** CG--
        - **Bar 5:** C-DF
        - **Bar 6:** C-D-
        - **Bar 7:** CG--
        - **Bar 8:** C-D-

      A 4 step sequence "CGDF" with Nth2 values "Pl1, Pl3, Mu3, Pl4" would result into:
        - **Bar 1:** C-D-
        - **Bar 2:** C-D-
        - **Bar 3:** CG--
        - **Bar 4:** C-DF
        - **Bar 5:** C-D-
        - **Bar 6:** CG--
        - **Bar 7:** C-D-
        - **Bar 8:** C-DF

      Following trigger conditions are available:
        - **Pl:** Play each nth bar
        - **Mu:** Mute each nth bar
        - **Ac:** Accent each nth bar
        - **Ro:** Roll each nth bar
        - **Fx:** enable Fx each nth bar
        - **Nx:** don't enable Fx each nth bar
- The **MIDI Channel** can be selected from 1-16.
- Following **MIDI Ports** are available:
    - **Default:** the default port as selected in the MIDI configuration page (usually USB1)
    - **USB1..USB4:** 4 independent USB ports are available which are visible for your operating system
    - **OUT1..OUT4:** STM32: 3 physical MIDI OUT ports are provided by the MBHP_CORE_STM32 module. The remaining one is reserved for the emulated MBSEQ.
      LPC17: all 4 physical MIDI OUT ports are accessible via OUT1..OUT4
    - **IIC1..IIC4:** to select the optional MBHP_IIC_MIDI ports
    - **OSC1..OSC4:** allows to send/receive events via Ethernet
    - **Bus1..Bus4:** virtual ports. They are used to control the transposer/arpeggiator (see loopback description below), and can optionally be used for the MIDI router function (see description of MIDI configuration page)
    - **AOUT:** the AOUT port. See description below
- **Track Instrument:** enters a special configuration page for instrument parameters such as Program & Bank Change and Instrument Name
- **INIT:** this item will flash whenever the selected partition type requires a re-initialisation of the track memory. Press&Hold the GP button below this item for two seconds to confirm the initialisation (this will clear all steps!)
- **PRESET:** this button opens a dialog which allows to select a preset file (left side), or to store a new preset:

  ```
  Load Preset File (10 files found)      Trk.      SAVE AS
   MYDRUMS1  MYDRUMS2  DEF_BEAT  MYSYNTH1 G1T1     NEW PRESET                EXIT
  ```

  Different sections can be selected before the preset is imported:

  ```
  Importing /presets/xxxxx.V4T to G1T1    Name Chn. Maps Cfg. Steps
  Please select track sections:           yes  yes  yes  yes   yes     IMPORT EXIT
  ```

  Exporting a track: just enter the name - done:

  ```
  Please enter Filename:                  /presets/<xxxxxxxx>.V4T
  .,!1 ABC2 DEF3 GHI4 JKL5 MNO6 PQRS7 TUV8WXYZ9 -_ 0  Char <>  Del Ins   SAVE EXIT
  ```

  Advantages of using preset files:
    - You can store your favourite track configurations, melody lines, drum loops, etc. in separate files to recall them later
    - You can prepare drum maps for different instruments
    - You can prepare CC setups for different instruments
    - You can share the files (which are stored in the preset/ directory) with other users
    - You can view and edit the files with a common text editor.

  Note that presets can also be exported/imported on the fly with the Multi Copy/Paste function:

- press MENU+COPY to export all selected tracks into the /PRESETS folder on SD Card. The resulting files are named COPY[track].V4T (the [track] numbers are independent from the actual track position)
- press MENU+PASTE to import "COPY[track].V4T" files from the /PRESETS folder into all selected tracks, starting from COPY1.V4T to (up to) COPY16.V4T
- use these new functions to quickly copy&paste tracks between patterns and sessions, to create temporary backups, to duplicate tracks, or whatever.
  Note that you can also import these COPY[track].V4T files from the MENU->Event->PRESETS menu, e.g. to exclude certain parts of the preset

IIC Ports

The MBHP_IIC_MIDI module allows you to add 4 additional, independent (!) MIDI outputs. Main advantage of multiple MIDI ports is reduced latency (as MIDI events can be sent in parallel), and relaxed MIDI channel handling (for 4 synths you don't need to take care about the MIDI channel at all)

Bus1..4: the Loopback Ports

A loopback port forwards Note and CC events to the MIDI handler of the sequencer itself. This opens a wide range of possibilities, especially for experimental, non-static, self-changing sequences. Classical usecase is a setup of self-modifiying and loopbacked tracks which play completely autarkic for several minutes without an interaction from your side.

When a track sends MIDI notes, it can control the transposer and arpeggiator w/o an external keyboard. For the transposer a single note should be sent, for the arpeggiator either four notes (from different parameter layers) or Chords (from a single parameter layer).

Loopbacks can be send to four busses. Each track provides the possibility to select the Bus to that the Transposer/Arpeggiator should listen. This allows to transpose tracks individually. The MIDI channel to which a note is sent doesn't matter.

A CC loopback allows to control sequencer parameters which are listed in the CC implementation chart. In difference to Note events, the MIDI channel gets an important purpose here, as it selects the target track of which the parameters should be modified. The CC# corresponds with the NRPN LSB number.
Example: Loopback Channel #3, CC#49 controls the Octave Transpose of Track 3

CC#1 has a special purpose, as it allows to control the Morphing parameter, which works track independent. Accordingly, Morphing can be controlled from any selected MIDI channel

Hot tip (1): put the loopback tracks into a separate pattern. This allows you to play different chord lines from a "master pattern" without changing the "slave patterns".

Hot tip (2): clock a loopback track with unqueal divider values, this can lead to surprising results!

In following MP3 sample a loopback track transposes a second track which plays a bass line:

From 0:00-0:07 the bassline is played w/ the base note C-3, from 0:00-0:23 the bassline is sometimes transposed by one octave (C-4) (Track Mode->Transpose activated). The loopback track is clocked at 384ppqn/4*16 (4th notes)
From 0:24 I selected an alternative pattern which sends various notes to the loopback port at a clock rate of 384ppqn/4*13 - the result sounds like a live jam on the keyboard, but it was more or less a random effect initiated by the asynchronously clocked loopback track. :)

AOUT Port

The AOUT Port allows you to control the analog outputs of a MBHP_AOUT, MBHP_AOUT_LC or MBHP_AOUT_NG module. 8 gate triggers are available at port J5A/J5B of the core module (enabled by default in the MBSEQ_HW.V4 file) or (preferred) at a DOUT shift register which is configured in

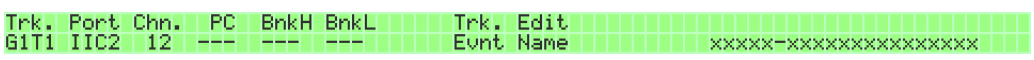
the MBSEQ_HW.V4 file (search for CV_GATE_SR1)

MIDI Channel encoding:

Event	Chn.	Behaviour
CC	1..8	*(channel itself has no effect)* CC Number #16: CV Ouput #1, Gate #1 always set CC Number #17: CV Ouput #2, Gate #2 always set CC Number #18: CV Ouput #3, Gate #3 always set CC Number #19: CV Ouput #4, Gate #4 always set CC Number #20: CV Ouput #5, Gate #5 always set CC Number #21: CV Ouput #6, Gate #6 always set CC Number #22: CV Ouput #7, Gate #7 always set CC Number #23: CV Ouput #8, Gate #8 always set
CC	9	CV Ouput #1, Gate #1 always set, CC Number ignored
CC	10	CV Ouput #2, Gate #2 always set, CC Number ignored
CC	11	CV Ouput #3, Gate #3 always set, CC Number ignored
CC	12	CV Ouput #4, Gate #4 always set, CC Number ignored
CC	13	CV Ouput #5, Gate #5 always set, CC Number ignored
CC	14	CV Ouput #6, Gate #6 always set, CC Number ignored
CC	15	CV Ouput #7, Gate #7 always set, CC Number ignored
CC	16	CV Ouput #8, Gate #8 always set, CC Number ignored
Note	1	Key Value -> CV Out #1, Gate #1 triggered
Note	2	Key Value -> CV Out #2, Gate #2 triggered
Note	3	Key Value -> CV Out #3, Gate #3 triggered
Note	4	Key Value -> CV Out #4, Gate #4 triggered
Note	5	Key Value -> CV Out #5, Gate #5 triggered
Note	6	Key Value -> CV Out #6, Gate #6 triggered
Note	7	Key Value -> CV Out #7, Gate #7 triggered
Note	8	Key Value -> CV Out #8, Gate #8 triggered
Note	9	Key Value -> CV Out #1, Velocity -> CV Out #2, Gate #1 and #2 triggered
Note	10	Key Value -> CV Out #3, Velocity -> CV Out #4, Gate #3 and #4 triggered
Note	11	Key Value -> CV Out #5, Velocity -> CV Out #6, Gate #5 and #6 triggered
Note	12	Key Value -> CV Out #7, Velocity -> CV Out #8, Gate #7 and #8 triggered
Note	13	Velocity -> CV Out #1, Key Value -> CV Out #2, Gate #1 and #2 triggered
Note	14	Velocity -> CV Out #3, Key Value -> CV Out #4, Gate #3 and #4 triggered
Note	15	Velocity -> CV Out #5, Key Value -> CV Out #6, Gate #5 and #6 triggered
Note	16	DOUT drum gates/triggers Notes to AOUT Channel #16 (C-1, C#1, D-1, ... upwards) will be redirected to up to 64 digital outputs of the DOUT chain. Each key number triggers an individual gate for 1 mS, accordingly this mode is predestinated for drum triggers. The used shift registers have to be defined in the MBSEQ_HW.V4 file (DOUT_GATE_SR1..8)

Track Instrument Page

This page is usually entered from the Track Event page by pressing GP button #8 (under "Trk.Inst."). Inside the page, you can switch back to the event page by pressing the same GP button.



This page allows to configure following parameters:

- **Port:** the MIDI port to which the instrument will send (same parameter like in the Event page)
- **Channel:** the channel to which the instrument will send (same parameter like in the Event page)

- **PC:** the program change event which will be sent while a track switches to this track.
  Note: together with the bank change events the PC event will only be sent if it is different compared to the previous track, since it could cause an additional delay on your synth before the newly selected patch is ready! Note also that the first note could be delayed for this reason, therefore it's recommended to use this feature only if the receiving MIDI device can handle patch changes quickly!
- **BankH** and **BankL**: the high- and low byte of a bank change CC. They will be sent before the program change if enabled.
- **Track Event**: switches back to the Track Event page.
- **Edit Name:**

```
Please enter Track Category for G1T1    <xxxxx-xxxxxxxxxxxxxxx>
.,;!1 ABC2 DEF3 GHI4 JKL5 MNO6 PQRS7 TUV8WXYZ9 -_ 0  Char <>  Del Ins Preset DONE
```

  Track and Drum instrument names can be edited so fast and easy like typing a SMS on a mobile phone. Use the first 10 GP buttons or encoders to cycle the characters (like on a telephone keypad), and the remaining buttons/encoders to select a character directly, move the cursor, delete/insert characters, selecting a preset (with the encoder) and to exit the editor.

Track Mode Page (Shortcut: MENU+GP Button #3)

Allows you to select following options:

```
Trk.   off      Transpose          Bus Hold  Sort  Restart  ForceScale  Sustain
G1T1     >Normal<  Arpeggiator       1   on    on     off        off        off
```

- **Track Mode:**
  - **Normal:** no transpose and no arpeggiator function
  - **Transpose:** Notes and CCs can be transposed with an external keyboard or from a Loopback track
  - **Arpeggiator:** Notes are controlled in a special way: instead of specifying the actual note, you make a note selection and an octave transposition selection. The note is selected from the currently received chord and the octave transposition is relative to that note. Both selections are done for each individual step and are displayed in a special format concisting of note and octave transposition.
    The following example shows the notation:
    Let's assume the Chord C-3, E-3, G-3, B-3 is played on the external MIDI keyboard and that the pattern
    1+0 --- 1-1 --- 1+1 --- 2+0 --- 3+0 --- 4+0 --- 2+0 3+1 2-1 4+2
    is entered into the sequencer.
    - at the first step the note C-3 (first note, no transpose) will be output.
    - at step 3, C-2 (first note, -1 octave transpose).
    - at step 5, C-4 (first note, +1 octave transpose).
    - at step 7, E-3 (second note, no octave transpose).
    - at step 9, G-3 (third note, no octave transpose).
    - at step 11, B-3 (forth note, no octave transpose).
    - at step 13, E-3 (second note, no octave transpose).
    - at step 14, G-4 (third note, +1 octave transpose).
    - at step 15, E-2 (second note, -1 octave transpose).
    - at step 16, B-5 (forth note, +2 octave transpose).

    Audio Example:

    You cannot imagine how easy it is to setup complex arpeggiator textures when you never tried this by yourself :) - the Session #4 video gives a nice example of some arpeggios which where created within a few number of minutes
    When you turn the rotary encoder within the Edit Page to select the "Arp Event" for a step, you may notice events with the format "x*y".
    These are Multi-Arp events. They play the appr. step so many times as notes are held on the external keyboard. Each key will be transposed by the specified octave value (-3..+3). Once all keys have been played, the sequencer continues with the next step of the track.
    This feature has been explained in Tutorial #4 for MBSEQ V2, and it is still available in MBSEQ V4

Audio Example for Multi-Arp Events:

- **Bus:** selects Bus1..Bus4 over which the Transposer/Arpeggiator should be controlled. Each bus provides a separate MIDI port/channel/keyboard zone that can be configured in the MIDI page. Alternatively busses can transfer the output of loopback tracks as described earlier. Since each track has an own bus assignment, it's possible to transpose tracks individually.
- **Hold:** the last key or chord is held until a new key/chord is played on the keyboard (only relevant for Tranpose/Arpeggiator mode)
- **Sort:** only relevant for arpeggiator mode: the note stack will be sorted when this function is active (default); arpeggios will be played with notes "as played" when this functions is deactivated.
- **Restart:** the track is restarted when a new key/chord is played
- **Force Scale:** played notes are mapped to the global scale, which can be selected in the Fx-Scale menu page, accordingly only notes are played which match with the selected harmony. This is especially useful when the track consists of randomly generated notes! 127 predefined scales are available!
  Nuke created some nice graphics for all scales - thank you!!!
- **Sustain:** omits the "Note Off" event - notes are played endless, independent from the gatelength. Especially useful for strings and pads!

Track Direction Page (Shortcut: MENU+GP Button #4)

Allows you to select following options:

```
>Forward<  PingPong  Rand.Dir  Rand.D+S Fwd. Back Replay  Repeat Skip Itv. SyncM
G1T1   Backward  Pendulum  Rand.Step      1    0    x1       0    0    4   no
```

- **Forward, Backward, Pendulum, PingPong, Random Direction, Random Step, Random Direction + Step:** should be selfexplaining
- **Fwd/Back/Replay Progression Parameters:** they allow to play the steps in an incontinous order.
  For example: "Steps Fwd: 5, Jump Back: 2" will play the steps in following order: 1-2-3-4-5-4-5-6-7-8-7-8-9-10-11-10-..
  The "Replay" parameter allows to repeat a portion of steps the given number of times.
  For Example: "Steps Fwd: 3, Repeat: x2" will play the steps in following order: 1-2-3-1-2-3-4-5-6-4-5-6-7-8-9-7-8-9-10..
  Hot tip: My favourite setting is: "Steps Fwd: 5, Jump Back: 3, Replay: 1x"
  In following MP3 sample a static sequence has been varied with different Step Fwd/Jump Back/Replay values while it was playing:

```
G1T1 Progr.Test      PA:Note   TA:Gate Step   3   F-3  Vel:100▮Len:Gld.    Synth
C-3▮ C-2▮ F-3▮ C-2▮ C-3▮ G-2▮ G-3▮ E-3▮ C-3▮ F-3▮ G-3▮ F-3▮ C-3▮ D-3▮>A-3▮<E-3▮
```

  And this is how it sounds:
- **Repeat/Skip/Interval Progression Parameters:** have been introduced in MIDIbox SEQ V4 to simplify the creation of "Berlin School" patterns (as known from artists like Klaus Schulze, Tangerine Dream, ...) - the Iteration parameter defines a range at which a step will be repeated several times, or several steps will be skipped.
  For example: "Itv.:4, Repeat:2, Skip:0" will play the steps in following order: 1-2-3-4-4-4-5-6-7-8-8-8-9-10-11-12-12-12-..
  Another example: "Itv.:4, Repeat:0, Skip:1" will play the steps in following order: 1-2-3-4-6-7-8-9-10-12-13-14-15-2-3-4-5-7-8-9-10-..
  Very interesting results can be achieved in conjunction with the groove function when it controls the velocity at a different interval. Also a second track which controls CC parameters with different track progression can lead to nice variations!
  Examples: A simple 4-step sequence is played, and the tone colour is varied from a separate 16-step CC track:

  It sounds repetitive and boring.
  Now we set Interval=4 and Skip=1:

Or we set Repeat=1, so that each 4th note will be played twice:

Let's try it with a 16 note track:

Again repetitive and boring!
Let's try Interval=4 and Skip=1:

Or Interval=4 and Repeat=1:

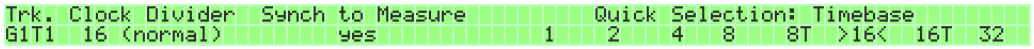
Or Interval=5 (uneven) and Repeat=3 (uneven as well):

Fun!

- **Synch to Measure:** the clock divider, but also the song position and progression parameters will be reset after each measure. This can result into very rhythmically results, try it out with different divider and progression values. The length of a measure (1..256 steps) can be configured in the Options menu.

Track Clock Divider Page (Shortcut: MENU+GP Button #5)

Allows you to select following options:



- **Clock Divider:** MBSEQ V4 works at a resolution of up to 384 ppqn, which is 16 times faster the MIDI clock standard of 24 ppqn. The divider allows you to clock the track with a fraction of the MIDI clock.
  A divider value of 4 clocks the track with normal resolution, accordingly each step plays a 16th note, and the gatelength can be varied between 1..96 steps!
  A divider value of 2 clocks the track two times faster, accordingly each step plays a 32th note, the gatelength can be varied between 1..48 steps.
  With a divider value of 64, each step will play a whole note (extremely slow, especially useful for strings/pads)
- **Normal/Triplet:** with the "normal" setting, the 384ppqn clock will be pre-divided by 24, whereas with "triple" it will be pre-divided by 16. This results into a triplet timebase, where (for example) 24 steps instead of 16 are played per measure during the same time period. The track length has to be adapted accordingly, or "Synch to measure" should be activated to ensure that the track is in synch with tracks which are played at a "normal" timebase.
  Example for a track clocked at a triplet timebase 16T. A bassline with "normal" timebase 16 is added at 0:03, a drumline at 0:07:

- **Synch to Measure:** the clock divider, but also the song position and progression parameters will be reset after each measure. This can result into very rhythmically results, try it out with different divider and progression values. The length of a measure (1..256 steps) can be configured in the Options menu.
- **Quick Selection:** quick access to most useful timebases. Triplet timebases are marked with a 'T'

Hot tip: try multiple tracks with unqual divider values like 7 or 13 for experimental sequences!

Drum sequence w/ different clock dividers: 

(give the drummer another beer...)

Track Length Page (Shortcut: MENU+GP Button #6)

Allows you to select following options:

```
Trk.   Length  Loop          QuickSel        Quick Selection: Length
G1T1    16/32    1            Length    4    8    16   24   32   64  128  256
```

- **Length:** each individual track can play 1 to 32 steps
- **Loop:** allows you to set a loop point to which the track will jump back once it has reached the end
- **Quick Selection:** allows you to quickly select most commonly used track lengths by pushing the button below the menu item.
  Alternatively a quick selection view for Loops can be activated, which is especially nice for stuttering variations during a live session:

```
Trk.   Length  Loop          QuickSel   1    5    9   13    1    1   17   25
G1T1    16/32    1            Loops     4    8   12   16   16   32   32   32
```

Hot tip: try multiple tracks with unqual track lengths like 3, 5, 13, 15, 27 for experimental sequences!

3 tracks w/ different tracklengths:

First a track with lenght=16 is played, then a second track with length=9, than a third track with length=13. At 0:25 all three tracks are played together.

Hot tip2: The length/loop presets are now stored in MBSEQ_C.V4 file (located in session directory) under the name "QuickSelLength", "QuickSelLoopLength" and "QuickSelLoopLoop". They could be edited with a text editor if you would like to have different values.

Track Transpose Page (Shortcut: MENU+GP Button #7)

Allows you to select following options:

```
Trk. Transpose:>Octave:+0< Semitone:+0
G1T1  -7   -6   -5   -4   -3   -2   -1   >+0< +1   +2   +3   +4   +5   +6   +7
```

- **Octave Transpose:** transposes the notes of a track by -7..+7 octaves. If the transposed key value is lower than 0, or higher than 127, the resulting value will be transposed back octavewise until it is within the range of 0..127 again
- **Semitone Transpose:** push the SELECT button to toggle between Octave/Semitone transpose selection. The semitone transpose increases/decreases the key value by +/- 7 semitones.

Track Groove Page (Shortcut: MENU+GP Button #8)

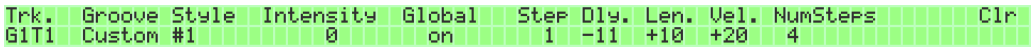
Allows you to select following options:

```
Trk.  Groove Style  Intensity  Global   Step Dly. Len. Vel. NumSteps          Clr
G1T1    Shuffle         4       on        1 VNEG    0    0  Preset not editable!
```

- **Groove Style:** selects a groove template - following styles are available:
  - **Shuffle:** each second step will be delayed by 0..127 micro ticks - this can be controlled with the intensity value.
  - **Inv. Shuffle:** like Shuffle, but steps with uneven numbers (1, 3, 5, ...) will be delayed
  - **Shuffle 2:** each second step will be delayed by a fixed number of microticks (8), each fourth step will be delayed by the value given with the intensity parameter
  - **Inv. Shuffle 2:** like Shuffle 2, but steps with uneven numbers (1, 3, 5, ...) will be delayed
  - **Shuffle 3:** uses following delay sequence: 1:0, 2:8, 3:4, 4:intensity
  - **Shuffle 4:** each second step will be delayed by 8 micro ticks. The intensity parameter controls the velocity

    - **Shuffle 5:** each second step will be delayed by 8 micro ticks. The intensity parameter controls the gatelength
    - **Custom #1..16:** configurable styles
- **Intensity:** available as VPOS/VNEG parameter to vary the style without creating a new groove template. Also nice for live tweaks to find "best matching" grooves!
- **Global:** By default, groove configuration changes are applied on all tracks. By turning Global "off" the selected groove will only be used for the edited track. This way it's possible to select individual grooves for certain tracks, but also to keep the groove selection for the remaining tracks global.

Custom #1..#16 global groove styles can be freely edited. They are stored on SD Card (MBSEQ_G.V4 file) and available for all patterns of a session:



- **Step:** selects the groove step (1-16)
- **Delay:** selects a delay modifier from VNEG,-127..0..+126,VPOS
- **Length:** selects a gatelength modifier from VNEG,-127..0..+126,VPOS
- **Velocity:** selects a velocity modifier from VNEG,-127..0..+126,VPOS
- **NumSteps:** selects the groove template length (1-16). When starting editing it makes sense to start with value 2 or 4 to get immediate response while the sequence is playing.

Hot tip: Use a custom groove with a reduced number of steps (e.g. 2, 3 or 4) and different velocity/length values on a track which controls the steps with progression parameters like "Itv.4, Repeat: 1, Skip:0". It rocks! This is one of my most favourite features! It can lead to fantastic results, especially if velocity doesn't modulate the volume of a sound, but sound parameters like CutOff, VCF Decay, FM Timbre, etc.!

Trigger Assignments Page (Shortcut: MENU+GP Button #9)

There are eight trigger layers A..H which control additional trigger functions. They can be set for each step individually with the 16 GP buttons within the Edit page. Following triggers can be assigned to the trigger layers:

- **Gate:** controls if a step should be played or not. If the Gate trigger is not assigned to any layer, all steps will be played, otherwise only the selected steps will be played.
- **Acc.:** Accent - the velocity will be set to maximum (127)
- **Roll:** step will be triggered 3 times with short delays - the same effect can be achieved with much more variations by setting the gatelength to 2xdelay, 3xdelay or 4xdelay (delay free definable) - the roll trigger is only an alternative, more comfortable solution
- **Glide:** overlaps two notes, so that a synth which provides a "fingered portamento" or "SusKey" function will activate the glide function
- **Skip:** the selected steps will be skipped, the sequencer jumps continues with the next step where the skip trigger is not set.
- **R.G.:** Random Gate - the step will be played randomly. This is especially useful for drum lines to increase the variation w/o creating multiple tracks
- **R.V.:** Random Value - the step values will be randomized
- **NoFx:** the step won't be forwarded to Fx functions like Echo, Humanizer and Limiter
- **RollG:** Roll and Roll2 parameter layers will be gated by this trigger

Manual Step Trigger Page (Shortcut: MENU+GP Button #11)

Push a GP button to trigger a step manually. Only the steps of selected tracks will be played. If the sequencer is running, it will continue from the position you've triggered. Accordingly, this page can also be used for live adjustments of the sequencer position.

The selected tracks will be synched to measure when the SELECT button is pressed in this page. This can sometimes be useful for live situations - e.g., while you changed the track positions, they could be out-of-synch to the main beat. Pressing the SELECT button will properly synch them back.

Morph Page (Shortcut: MENU+GP Button #12)

This feature allows you to smoothly morph between one and another part of the track. The morph value (0-127) can either be controlled from this menu page, or with an external MIDI controller (e.g. with a ModWheel):

- **Mode:** on or off
- **Val.** the morph position - can also be controlled with an external MIDI controller
- **Destination Range** the second part of the track to which the first part should be morphed (e.g. if the track has a length of 16 steps, the second part could be located at step 17-32
- **Vertical bar at right page:** graphical representation of the morph value

Slow morphing between two arp patterns:

Fast morphing between two CC patterns:

(4 CC tracks are used to control several bandpass filters)

BPM Page (Shortcut: MENU+GP Button #13)

MIDIbox SEQ can work as MIDI clock master or slave. The MIDI clock (24ppqn) is multiplied by 16 to 384ppqn, which means, that the length of a 16th note is 96 microticks. Microticks are relevant for the gatelength and especially the groove function.

- **BPM Clock Mode** switches between master/slave clock and auto mode.
  - In **master** mode, the tempo will be generated internally with a selectable BPM rate. The sequencer will transmit MIDI Clock/Start/Stop/Continue events to the MIDI Out ports for synchronising with external gear (this has to be enabled for each port separately in the MIDI config page)
  - In **slave** mode, the sequencer will be controlled by incoming MIDI Clock/Start/Stop/Continue events for synchronisation with an external MIDI clock master. Note that the sequencer will halt as long as no MIDI clock is received in this mode!
  - In **auto** mode, the sequencer will automatically switch between master and slave mode. This is the most comfortable setting, and therefore enabled by default.
    Slave mode is selected once a MIDI Clock/Start/Stop/Continue event has been received.
    Master mode is selected, when no MIDI clock command is received and the PLAY button is pressed.
- **Preset:** select 1 of 16 tempo presets
- **Tempo:** only relevant for master mode: the BPM rate (2.5-300.0) - accuracy is 0.1 BPM, use ENC3 to set the rough value in +/- 1 steps, and ENC4 to set the fine value in 0.1 steps
- **Ramp:** defines a timespan of 1..99s at which the tempo change should take place.
- **Fire Preset:** changes the tempo (slowly) at the given ramp time. E.g., if the current tempo is 120, the new tempo is 140, ramp time is 5s: press this button to change the tempo from 120..121..122...140 within 5 seconds.
- **Preset page:** displays a preset page which allows you to select one of 16 tempo presets with GP buttons (very nice in conjunction with ramp times)
- **MIDI Clock In:** enable the MIDI clock in receiver for each individual MIDI IN port

- **MIDI Clock Out:** enable the MIDI clock out sender for each individual MIDI OUT port
- **Delay:** allows to apply a negative or positive delay from -128 to 127 mS for sent MIDI events (Clock, Notes, CCs, etc.) to the selected MClk port in order to compensate latencies in the audio path.
- **Ext.Restart:** sends a MIDI clock start event to all MIDI devices at the next measure - a very useful feature to re-synchronize external MIDI gear to the MIDIbox.
  To evaluate this function, try following steps:
  - connect a MIDI sequencer (or synth. with sequencer function) to your MBSEQ and configure it for MIDI slave mode.
  - ensure that MIDI clock is enabled for all OUT ports which should send the MIDI start event (+ a MIDI clock)
  - press PLAY button of MBSEQ - the external sequencer should start to play as well.
  - now stop the external sequencer
  - (change a patch, sound, or whatever...)
  - press Ext.Restart: the external sequencer should start once MBSEQ reaches the first step.
  - Note that the same function can be accessed by pressing MENU+METRONOME. A dedicated button can be assigned to this function as well (requires a modification in MBSEQ_HW.V4
- **Tap Tempo:** Tap the button at least four times to define the BPM tempo manually. If the sequencer is currently stopped, it will start automatically with the 5th tap. The same function can be accessed by pressing MENU+PLAY

```
 20   80   85   90   95  100  105  110  115  120  125 >130< 135  140  145  150
20s   5s   0s   0s   0s   0s   0s   0s   0s   0s   0s > 5s<  0s   0s   0s   0s
```

Following MP3 demonstrates slow tempo changes which are controlled from the BPM Preset page - note that a such a tempo change doesn't block the sequencer. E.g., during the ramp time you can switch to the PATTERN page to select a new pattern, you can mute tracks in the MUTE page, etc.:

Metronome Page (only available from the main menu)

Allows you to select following options:

```
Metronome Port Chn. Meas.Note  Beat Note
   off    Def. #10     C#1        c#1
```

- **on/off:** same function as the dedicated METRONOME button
- **Port:** the MIDI port to which the metronome will send
- **Channel:** the channel to which the metronome will send
- **Measure Note:** note which will be send on each measure
- **Beat Note:** note which will be send on each beat

Save Page (Shortcut: MENU+GP Button #14)

Allows you to save the pattern of the currently active pattern group:

```
Grp. Save Pattern        to Target       Category: NoCat   Label: <Pattern A1>
G1 (Track  1- 4)/1:A1 ----> 1:A1   SAVE
```

Select the target bank with GP6, and the target pattern with GP7. While changing it, the name of the pattern which is already stored at this position will be displayed at the right LCD:

```
Grp. Save Pattern        to Target       Category: NoCat   Label: <Pattern A1>
G1 (Track  1- 4)/1:A1 ----> 1:A2   SAVE   1:A2 on Disk: MBSID ArpChords 2
```

Finally press SAVE (GP8 button). You will be asked for a Category and Pattern name:

```
Please enter Pattern Category for 1:A1  <xxxxx-xxxxxxxxxxxxxxx>
.,!1 ABC2 DEF3 GHI4 JKL5 MNO6 PQRS7 TUV8WXYZ9 -_ 0  Char <>  Del Ins Preset SAVE
```

Use the first 10 GP buttons or encoders to cycle the characters (like on a telephone keypad), and the

remaining buttons/encoders to select a character directly, move the cursor, delete/insert characters, selecting a preset (with the encoder) and finally to SAVE the pattern.

MIDI Page (Shortcut: MENU+GP Button #15)

This page is divided into four subpages that have to be selected with the left sided GP buttons:

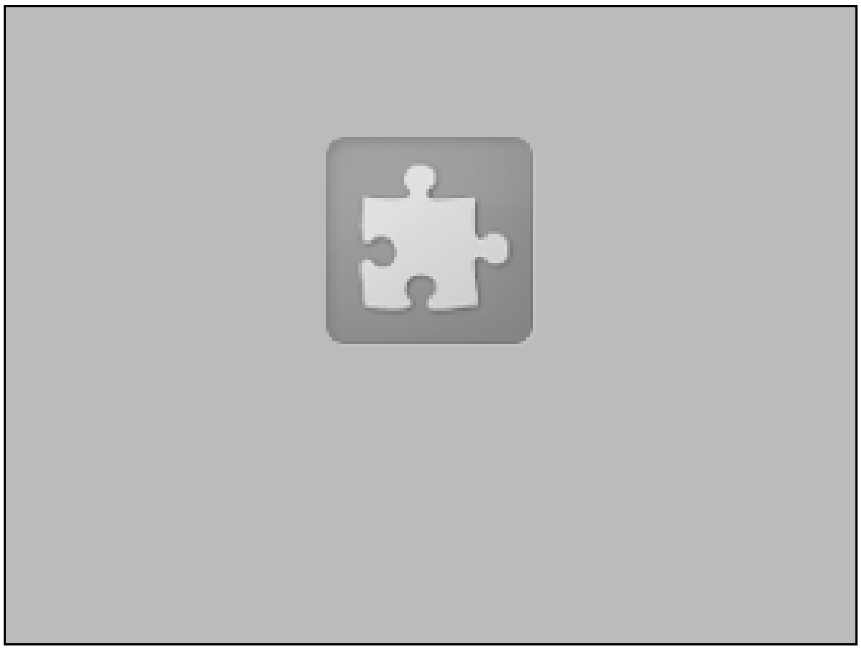
Transposer and Arp.:

```
Transposer  Section    MIDI   Ext.          Bus Port Chn. Lower/Upper Mode   Reset
and Arp.    Control    Router Ctrl Misc.    1   IN1  #16   ---   ---   T&A    Stacks
```

- **Bus:** four individual busses (Bus1..Bus4) are available for this function. Each bus provides separate note stacks for Transposer and Arpeggiator.
- **Port:** the MIDI input port for the selected bus. If "ALL" is selected, MIDI data will be received from any port.
- **Channel:** selects the MIDI channel over which the arpeggiator/transpose can be controlled, and CCs will be received (e.g. for the morph function). With "---" no events will be received (bus disabled)
- **Lower/Upper:** defines the lower and upper note of a keyboard zone for transpose/arpeggiator function.
  With Lower = "---" and Upper = "G-8" the complete keyboard will be taken.
  Defining different (or overlapping) keyboard zones allows you to control the four Transposer/Arpeggiator busses from a single MIDI keyboard over the same MIDI channel.
- **Mode:**
  - **T&A:** MIDI events are routed to the Transposer/Arpeggiator notestacks
  - **Jam:** MIDI events are used for recording and forwarding to the MIDI Port and Channel of the currently selected track.
- **Reset Stacks:** clears all note stacks. Useful if the MIDI keyboard (or external sequencer) has been disconnected from MIDIbox SEQ while some keys were still active.

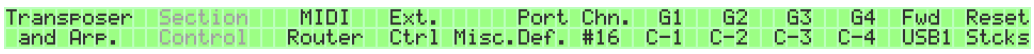
Section Control:

It's possible to select sections of a track that should be played from a MIDI keyboard as demonstrated in following video:



Each group (G1/2/3/4) has a separate selection zone on the keyboard.
Key C..B select section 1..12, the first key of the octave (C) plays the first section as usual, it has the same effect as if this feature is disabled.
The width of a section depends on the track length.

E.g., if the track length is set to 32, and if it consists of 256 steps, 8 sections are available which can be selected with Key C/C#/D/D#/E/F#/F/F#/G
It is recommended to activate the "Follow" function under UTILITY->OPTIONS when using this feature, so that the edit display gets automatically updated whenever the section is changed.



- **Port:** selects the MIDI port that should be used to select the sections.
- **Channel:** selects the MIDI channel that should be used to select the sections.
- **G1..G4:** selects the octave that should be used to select the sections for each pattern group individually. It is possible to assign all groups to the same octave if desired.
- **Fwd:** optionally all octaves that are not selected by G1..G4 can be forwarded to the given port.
- **Reset Stacks:** clears all note stacks. Useful if the MIDI keyboard (or external sequencer) has been disconnected from MIDIbox SEQ while some keys were still active.

MIDI Router:

Provides a simple possibility to route incoming MIDI events to synthesizers which are connected to the MIDI Out ports (which means: also to the AOUT port - MBSEQ replaces a CV interface!)

- **Node:** 8 routing pathes are available
- **IN:** selects the MIDI IN port.
- **Source Channel:** either a dedicated source channel (1-16) or "all" channels can be selected
- **OUT:** selects the MIDI output port
- **Target Channel:** either a dedicated target channel (1-16) or "all" channels can be selected. Alternatively, also "Track" can be selected as target channel. In this case, incoming MIDI events will be routed to the MIDI port and channel of a track depending on the incoming MIDI channel number.
  Usecase: MIDI events, such as CC or Notes, should be sent from a master keyboard or MIDI controller to synths which are assigned to different port and MIDI channels in the track configuration.
  Just select the track with the MIDI channel on your keyboard/controller, the router will take care that the events reach the right destination.
  Another alternative option is "SelTrk" - MIDI events are sent from a master keyboard or MIDI controller to the MIDI port and channel of the currently selected track.
- **Default Port:** selects the port to which MIDI events should be sent if the "Def." port has been selected in the EVENT page.

Ext. Ctrl:

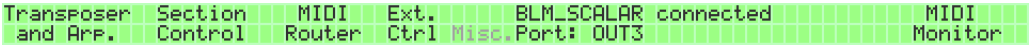
This subpage allows to assign CCs to functions like Morph Value, Scale, Song, Phrase, Patterns, Banks, All Note Off, etc.
Some of these functions can also be assigned to a Program Change Event.

The MIDI ports and channel over which these functions are accessible is free assignable. An IN port can be specified for receiving the events (e.g. functions should be controlled from an external DAW), and an OUT port for sending the events (e.g. changes made interactively on the control panel should be recorded with an external DAW).
The MIDI channel is disabled by default, which means that the Ext Ctrl. feature has to be explicitly enabled in the MIDI->Ext Ctrl. page!!
Following functions can be assigned:

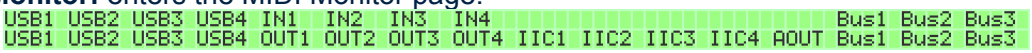
- **Morph Value:** controls the morph function for all tracks.
- **Scale:** allows to change the scale for the force-to-scale function.
- **Song Number:** selects a song
- **Song Phrase:** selects a phrase in the current song
- **Mixer Map:** selects and dump a mixer map

- **Pattern G1..G4:** selects a pattern for Group 1..4 (4 different CCs have to be specified)
- **Bank G1..G4:** selects a bank for Group 1..4 (4 different CCs have to be specified, however it's recommended to leave the banks untouched, which means: G1 should always use Bank 1, G2 should use Bank 2, G3 Bank 3, G4 Bank 4)
- **All Notes Off:** empties all note stack (transposer, arpeggiator, AOUT)
- **NRPNs:** sequencer parameters can be accessed via NRPNs, see also mbseqv4_cc_implementation.txt. This option allows to enable/disable this function.
- **Program Change Mode:** specifies what a Program Change event should change: off/Patterns/Song/Phrase
- **Mutes (first CC):** the 16 track mutes can be controlled via CCs as well. With this option you specify the first CC which should be taken. E.g. with CC16, the Mute of Track1 will be turned on/off with CC#16, Track2 with CC#17, Track3 with CC#18, ... Track16 with CC#31

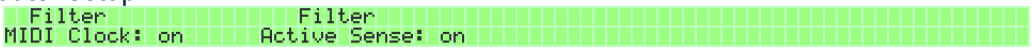
Misc.:



- **BLM_SCALAR port:** see this manual chapter.
- **MIDI Monitor:** enters the MIDI Monitor page:



  It shows most of the IN ports at the upper line (e.g. Bus4 isn't displayed), and most of the OUT ports at the lower line.
  Whenever an event is received or sent, the appr. item will show the event for a short moment. This gives you a great overview of the MIDI activity, especially to analyze the current track and MIDI router setup.



  By pressing the SELECT button, filters for MIDI Clock (F8) and Active Sense (FE) events can be enabled/disabled.
  Both filters are activated by default. Once the clock filter is deactivated, the OUT/IN items will (probably) show CLK permanently as long as a MIDI clock is received/sent over the appr. port. This allows you to analyze the MIDI Clock In/Out settings as configured in the BPM page.
  Once the Active Sense filter is deactivated, FE events will be displayed periodically on the appr. IN port if a connected MIDI keyboard sends such events.

Jam Page (Shortcut: EDIT->Record Config or UTILITY->Jam)

Connect an external MIDI keyboard to your MIDIbox SEQ V4 and start to Jam!

Following functions can be controlled from the "Jam cockpit":

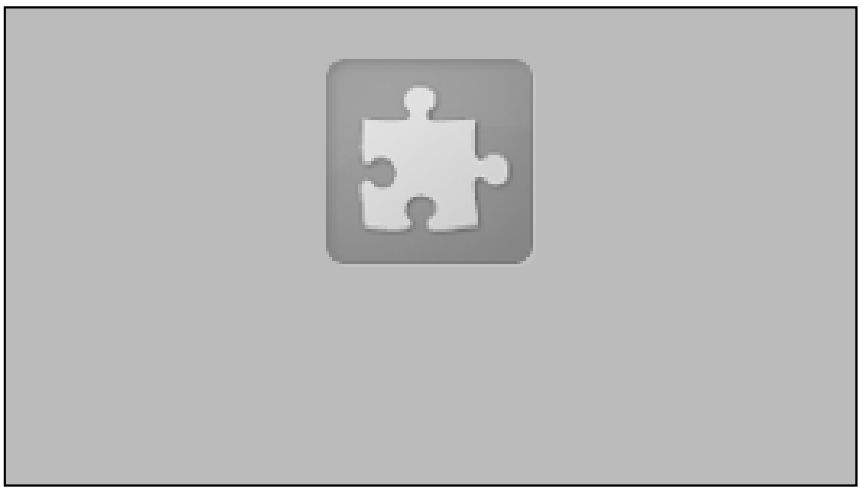
- **Step Recording** allows to input notes and CCs stepwise, the cursor will jump to the next position after a new note/CC has been received and stored into the step.
- **Realtime (Live) Recording** supports monophonic note, polyphonic chords (chord 1/2 and note/note/note layer mode), and CC events, which are stored into the currently selected track while the sequencer is playing.
- **Live Pattern Recording** can be used to play and record customizable arpeggiator sequences.
- **Live Forwarding** forwards incoming MIDI events (e.g. from a MIDI keyboard) to the MIDI port/channel which is configured for the currently selected track. Octave Transpose, MIDI effects (such as Echo, Humanizer, Limits) such as Force-to-Scale can be optionally applied.

In distance to certain other sequencers, it is not required to stop an ongoing sequence to start recording!
Incoming events will be immediately inserted into the selected track. If the current step already holds a note/CC, it will be replaced by the new one. The gatelength of a note will be recorded as well, it can allocate multiple steps. If a new note is played over such a "stretched" step, the previous note will be automatically split.

Incoming CC events will be automatically assigned to free CC layers so that no pre-configuration is

required. A CC layer is "free" (unassigned) as long as the CC number is turned "off". This is the default setting for all CC layers after initialisation, and can be changed in the MENU->EVENT page if desired.

Here an older video (created on MIDIbox SEQ V3) which demonstrates the live recording - many more features have been added in V4, but this video gives you good expression about the basic usage:



Midibox Sequencer V3 for Live Recording from Stuart Mitchell

Important: *at least one bus has to be assigned to Jam mode in order to use it for recording and live forwarding! Please configure it in the MIDI configuration subpage by selecting a MIDI port, channel, keyboard zone and select the Jam (instead of T&A) function!*

Step Recording:

```
Trk. Rec. Fwd.    Configuration Pages   Mode AStart Step Inc.           Toggle
G1T1 off   on >Step<Live Ptn. MIDI Misc Poly  on      1  + 1            Gate
```

- **Track:** selection
- **Rec(ording):** enables/disables recording
- **Fwd (Forwarding):** enables/disables forwarding of incoming notes to the MIDI port/channel of the selected track
- **Configuration Pages:** allows to select the subpage for Step/Live/Pattern/MIDI/Misc configuration.
- **Mode:** switches between Mono and Poly recording. With Poly recording multiple note events can be recorded into a single step - ensure that a sufficient number of parameter layers has been configured as a Note Layer in the EVENT configuration page.
- **AStart:** synchronized auto start of track recording. To use this feature, the sequencer has to be stopped. With the first played note, the sequencer will start and store the note into the first step.
- **Step:** use the encoder below this item to move the step cursor. Once this item is selected, the datawheel can be used for this purpose as well (like in the EDIT page)
- **Inc(rementer):** specifies the number of step the cursor should jump after a note has been entered. Works only in Mono recording mode. E.g. with "0" the cursor won't be moved, so that different notes can be tried out, with "1" the cursor will be automatically moved to the next step, with "4" to the next quarter.
- **Toggle Gate:** toggles the gate of the currently select step. Useful to quickly enable/disable a step during step recording.

Live (Realtime) Recording:

```
Trk. Rec. Fwd.    Configuration Pages   Mode AStart Quantize
G1T1 off   on  Step>Live<Ptn. MIDI Misc Poly  on        10%
```

- **Mode:** switches between Mono and Poly recording. With Poly recording multiple note events can be recorded into a single step - ensure that a sufficient number of parameter layers has been configured as a Note Layer in the EVENT configuration page.

- **AStart:** synchronized auto start of track recording. To use this feature, the sequencer has to be stopped. With the first played note, the sequencer will start and store the note into the first step.
- **Quantize:** than lower the percentage value, than lower the quantization (-> events not shifted to the next step)

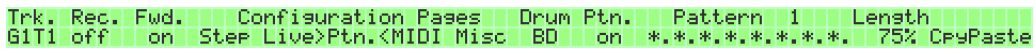
Live Pattern Recording:

Live patterns are inspired from the note repeat function of Akai MPC to allow a quick and expressive pattern creation in real time (see this forum discussion). The 16 step gate/accent patterns are free customizable. Velocity values are taken from the original entered note, and can be changed via aftertouch while the note(s) is/are playing.

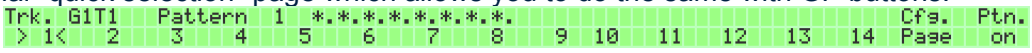
In order to edit a pattern, press&hold the SELECT button, and change the gate/accent with the GP buttons. The patterns are stored in the local (session specific) MBSEQ_C.V4 file with following ASCII format (. = no trigger, o = Gate, * = Gate+Accent):

```
LivePattern  1  o...............
LivePattern  2  o.......o.......
LivePattern  3  ....o.......o...
LivePattern  4  o...o...o...o...
LivePattern  5  *...o...*...o...
LivePattern  6  ..o...o...o...o.
LivePattern  7  ..*...o...*...o.
LivePattern  8  o.o.o.o.o.o.o.o.
LivePattern  9  *.o.o.o.*.o.o.o.
LivePattern 10  .o.o.o.o.o.o.o.o
LivePattern 11  .*.o.*.o.*.o.*.o
LivePattern 12  oooooooooooooooo
LivePattern 13  *ooooooooooooooo
LivePattern 14  *ooooooo*ooooooo
LivePattern 15  *ooo*ooo*ooo*ooo
LivePattern 16  ooooo*ooooooo*oo
```

and can be modified with the MIOS Studio based Filebrowser as well.

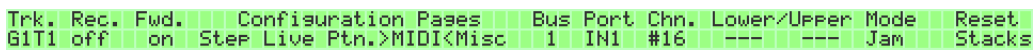


- **Drum:** allows to select the instrument layer if the track is configured as a drum track in the EVENT page. Has no function for other track modes (in this case, monophonic and polyphonic notes can be played and recorded).
- **Ptn:** enables/disables pattern play/recording
- **Pattern:** allows to change between Pattern 1..16 with the encoders. Press this button to enter a special "quick selection" page which allows you to do the same with GP buttons:

  Note: in this page it's possible to edit the selected pattern by turning the GP rotary encoders.
- **Length:** specifies the gatelength
- **Cpy (Copy):** copies the current selected pattern into edit buffer (the COPY button can be used for the same purpose)
- **Paste:** copies the edit buffer into the current selected pattern (the PASTE button can be used for the same purpose)

MIDI Configuration:



- **Bus:** four individual busses (Bus1..Bus4) are available which allow to define how incoming MIDI events should be processed. They can either be assigned to the Transposer and Arpeggiator functions (T&A), or to the Jam functions.

Important: *at least one bus has to be assigned to Jam mode in order to use it for recording and live forwarding!*

- **Port:** the MIDI input port for the selected bus. If "ALL" is selected, MIDI data will be received from any port.
- **Channel:** selects the MIDI channel over which the arpeggiator/transpose can be controlled, and CCs will be received (e.g. for the morph function). With "---" no events will be received (bus disabled)
- **Lower/Upper:** defines the lower and upper note of a keyboard zone for transpose/arpeggiator function.
  With Lower = "---" and Upper = "G-8" the complete keyboard will be taken.
  Defining different (or overlapping) keyboard zones allows you to control the four Transposer/Arpeggiator busses from a single MIDI keyboard over the same MIDI channel.
- **Mode:**
  - **T&A:** MIDI events are routed to the Transposer/Arpeggiator notestacks (and not used for recording)
  - **Jam:** MIDI events are used for recording and forwarding to the MIDI Port and Channel of the currently selected track.
    Important: *at least one bus has to be assigned to Jam to use it for recording and live forwarding!*
- **Reset Stacks:** clears all note stacks. Useful if the MIDI keyboard (or external sequencer) has been disconnected from MIDIbox SEQ while some keys were still active.

Misc. Configuration:

```
Trk. Rec. Fwd.    Configuration Pages    Oct.  Fx   FTS
G1T1 off   on  Step Live Ptn. MIDI>Misc< +0   on    on
```

- **Oct.:** Octavewise transpose
- **FX:** enables Humanizer, LFO, Limiter and Echo
  Note: the Echo effect will only work when the sequencer is running!
- **FTS:** enables Force-To-Scale

Utility Page (Shortcut: MENU+GP Button #10 or F1)

This page provides some useful functions for track modifications:

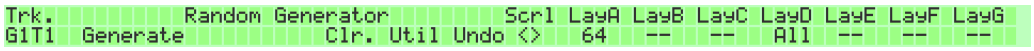
```
Trk.        Utility Functions                    Quick Menu Change
G1T1 Copy Paste Clr Move Scrl Rand Undo Save  Jam      Opt. PMte Disk Mute UnMte
```

- **Copy:** transfers the currently selected track into the copy buffer.
  If you press and hold the button below the COPY item, you can select the range which should be copied into the buffer with the GP encoders.
  The encoders left of or at the begin marker shift the begin position, the encoders right to the begin marker shift the end position.
  If you are unsure about the current position, just always use the leftmost encoder to move the begin marker, and the rightmost encoder to move the end marker.
  Releasing the copy button copies the selected range into the buffer. If the button is just pressed and depressed, the whole range will be copied.
- **Paste:** transfers the copy buffer content into the track.
  Either the parameter/trigger layers, or the whole track will be copied. The behaviour of this function can be configured in the UTIL->OPT page
  As long as the button below PASTE is pushed, you can specify the target position with a GP rotary encoder.
  Hot tip: This is the quickest solution to duplicate parts of a track!
- **Clr:** clears the parameter/trigger layers, or the whole track. The behaviour of this function can be configured in the UTIL->OPT page
- **Move:** as long as the appr. button of this function is pushed, the edit page will be displayed, and steps can be moved with the encoder below the step.
  It should be self explaining once you try it out! :)
- **Scroll:** as long as the button of this function is pushed, the steps of the current track can be scrolled with the rotary encoders. The start position of the scrolling function depends on the

used rotary encoder. E.g., if the first GP encoder is used, the whole track will be scrolled, if the 9th rotary encoder is used, the 9th and all steps behind will be scrolled, and step 1-8 will be left untouched.
- **Random:** shortcut to the Random Generator (see below)
- **Undo:** an undo function for the last Paste/Clear/Move/Scroll/Random operation.
- **Save:** directly branches into the save menu page (shortcut)
- **Jam:** directly branches into the Jam page (shortcut)
- **Opt.:** directly branches into the options page (shortcut)
- **PMte:** directly branches into the port muting page (shortcut)
- **Disk:** directly branches into the disk page (shortcut)
- **Mute:** mutes all tracks
- **UnMte:** un-mutes all tracks

Random Generator Page (Shortcut: UTILITY (F1)->Rand)

This menu page allows to randomize the layers based on individual "intensity" parameters. In difference to the "Humanize" function, random values are statically stored in the layers, so that they can be modified (within the EDIT page, or with Utility functions like Scroll, Move, ...) until a "best matching" line has been found.



- **Generate:** generates a new pattern based on the constraints given at the right LCD
- **Clr:** clears the parameter/trigger layers, or the whole track. The behaviour of this function can be configured in the UTIL->OPT page
- **Util:** shortcut to the Utility page - note that this menu has a shortcut to the Random page at the same position, so that you can quickly toggle between the two pages
- **Undo:** copies back the overwritten pattern
- **Scrl:** scrolls through the list of available layers (parameters/triggers/drum instruments)
- **LayA/LayB/... (0..63):** defines the "intensity" for a Parameter Layer. If 0 ("--"), the layer won't be overwritten, otherwise all 32 steps get random values of 64 +/- intensity
- **TrgA/TrgB/... (0..15):** defines the "intensity" for a Trigger Layer. If 0 ("--"), the layer won't be overwritten, if 15 ("All"), all steps will be activated. Otherwise the values 1..14 define the propability (6.25%..93.75%) that a step will be activated.
- **Drum instrument names (0..15):** defines the "intensity" for a Drum instrument. If 0 ("--"), the layer won't be overwritten, if 15 ("All"), all steps will be activated. Otherwise the values 1..14 define the propability (6.25%..93.75%) that a step will be activated.

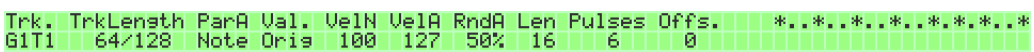
Hot tip: use the randomizer in conjunction with the Force-to-Scale function for harmonic results!

Euclidean Rhythm Generator Page (Shortcut: SELECT->GP16 in EDIT page)

This menu page provides an Euclidean Rhythm Generator which was inspired from this Ruin&Wesen blog article.

In distance to common solutions which you can find around the web, the MBSEQ based generator writes static sequences into the track storage so that they can also be modified if desired! There are separate views for Drum and "Normal" tracks - for Drum tracks individual sequences can be generated for each instrument, while in a normal track the gates are only generated for a single instrument.
Another difference to common solutions is the random accent generator which adds some more variety to each step.

Normal Track View:



Drum Track View:

- **TrkLength:** selects the track length. The length should be adapted to the maximum loop length which is defined on the right display.
- **Drum:** if the track is configured for drum mode, the instrument can be selected here.
- **Note:** if the track is configured for drum mode, the note which is played by the instrument can be selected here (same as in MIDI event configuration page)
- **Par(A-P):** if the track is configured for normal mode, the parameter layer can be selected here.
- **Val.:** parameter values have to be overwritten for parameter layers B-P, the "Val." item allows to set the values which should be used.
- **VelN and VelA:** velocity used for normal and accented steps.
- **RndA:** defines the probability for generating accented steps. Whenever the value is changed, accents will be generated immediately. If the track provides a parameter layer for velocity, these values will be changed instead of setting accent triggers. This allows to fine-adjust the velocity values later in EDIT page.
- **Len:** defines the loop length of an euclidean pattern.
  Changing this value will immediately re-generate pattern + accents
- **Pulses:** defines the number of pulses which will be inserted into the loop.
  Changing this value will immediately re-generate pattern + accents
- **Offset:** allows to shift the generated pattern within the loop.
  Changing this value will immediately re-generate pattern + accents
- **Dots and Stars:** show the currently active gate/accent pattern (similar to the pattern shown on EDIT page) to give an overview about the generator results.

Demos:

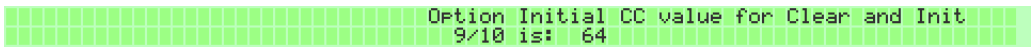
- Changing the parameters while a single drum track is playing:
  
- Different chords have been entered into each step, and the gates are modified by the rhythm generator:
  

Options Page (Shortcut: UTIL (F1)->Opt.)

This page has an unusual layout and handling! It is intended for special customizations for which no other place have been found, or which need extended descriptions (whenever a short item name wouldn't describe the parameter sufficiently).

The various parameters have to be selected with one of encoders GP1..8 (left page), and the parameter value has to be selected with one of the encoders GP9..16 (right page).

Here a list of all available options:



- **Track Synchronisation - Steps per Measure**: the length of a measure is 16 16th note steps by default, it can be set from 1..256 steps.
  This setting affects:
  - the synch-to-measure function for clock divider reset
  - the metronome ("Meas.Note" played after x steps)
  - the song position displayed at song page (shows reference step position)

  Note: for max. steps != track length it makes sense to activate the synch-to-measure function for each track (-> divider page), so that the tracks are always in synch with the reference step position. It can be left deactivated if it is your intention to clock tracks asynchronously to the reference position.
- **Pattern Change Synchronisation - Change considered each x steps**: defines the number of steps per pattern. This setting affects:
  - the synch-to-measure function for pattern changes (pattern change after X steps)

    - the loop incrementer in song mode
- **Pattern Change Synchronisation:** if enabled, a pattern change made in the PATTERN or SONG page (Phrase mode) won't take place immediately, but will be synchronized to the pattern length of X steps as defined in the previous option page.
- **Restart all Tracks on Pattern Change (RATOPC):** added due to requests from multiple users: all tracks will be restarted whenever a new pattern is selected. If SyncChange enabled, this means that all tracks will synchronize correctly independent from their track length, if SyncChange disabled, this means that you can do nice breaks while changing patterns (try it! ;-)
- **Dump a predefined Mixer Map on Pattern Changes:** whenever a pattern is changed, a corresponding mixer map will be dumped. The Mixer map number is predefined: A1 uses Mixer Map #1, A2 uses Mixer Map #2, etc...
- **Synchronize MUTE to Measure:** if enabled, mutes set in the Mute page will be synched to the selected steps per measure. This feature is inspired from the "MIDI Clip Launcher" of Ableton Live.
- **Synchronize UNMUTE to Measure:** the same for Unmute (behaviour can be selected separately).
- **Paste and Clear Button will modify** allows you to change the behaviour of the Paste and Clear function:
    - **Only Steps:** only parameter and trigger layers will be cleared/pasted (default)
    - **Complete Track:** the whole track configuration will be cleared/pasted. Only exception: MIDI channel and MIDI port will never be overwritten.
- **Initial CC value for Clear and Init is: X**: allows to specify the default value which will be used for CCs whenever the Clear button is pressed, or the Init function in the MENU->EVENT page is used. It's normally 64, but some people prefer 0 instead. Just define it here.
- **If Live function, matching received MIDI events will ...**: this experimental function works in conjunction with Live mode or the MIDI Router in "Track" or "Sel.Trk" mode.
  Whenever Note, CC, PitchBender, Program Change events are received on the selected IN Port, the corresponding track layer (or LFO CC) will be muted completely, or temporary for a given number of steps. This allows to temporary overrule events generated by the sequencer from an external MIDI keyboard or controller.
  Supported settings:
    - **do nothing**: function disabled
    - **mute the appr. layer**: once a matching events has been received, the corresponding track layers will be muted, and have to be unmuted in the MUTE page
    - **mute layer for X steps**: allows to temporary mute the layer for a given number of steps

Mixer Page (Shortcut: MENU+GP Button #1)

MIDIbox SEQ V4 provides a MIDI mixer which can handle up to 127 different maps. They can be stored and restored from a dedicated BankStick. Each mixer map consists of:

- 16 free definable MIDI port assignments
- 16 free definable MIDI channel assignments
- 16 Program Change values
- 16 Volume CC values
- 16 Panorama CC values
- 64 free assignable CCs (4 for each port)

There are 9 pages, which can be selected with the datawheel, or alternatively with the Rew/Fwd buttons when no song is playing: MIDI Port, MIDI Channel, Prog.Change, Volume, Panorama, CC1-4

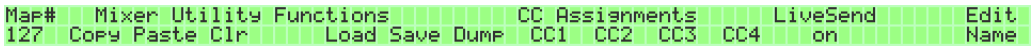
Values can be changed and sent with the GP encoders. The leftmost value ("----") deactivates the mixer item - no value will be sent.

The ALL and FAST button are working as well. The ALL button provides the two known functions (values set to same value while button pushed, relative changes as long as LED active). The FAST function will be deactivated/activated automatically depending on the value range.

If a GP button of a mixer channel is pressed, all events of this channel will be dumped.

Values are sent directly over the selected MIDI port - all ports are selectable, even Loopback and AOUT!

When the SELECT button is pressed, a utility page will be displayed:



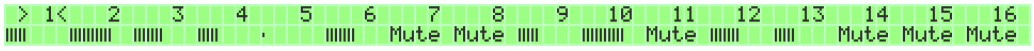
This page allows:

- to change and load a mixer map (one of 127)
- to Copy/Paste the map
- to clear the map
- to reload the map from BankStick
- to save the map into BankStick
- to dump the complete map via the MIDI/AOUT/Loopback ports
- to change the assignments for CC1/CC2/CC3/CC4
- to activate the Live Send" mode. If enabled, value changes in the mixer map will be immediately sent, if disabled they will only be sent with the Dump function (either triggered in this page, or with a GP button for a single channel in the mixer main page)

Hot tip: since the ports and channels are freely assignable and working totally independent from the selected sequencer patterns, the mixer map function behaves like a MIDI controller - you can define up to 127 maps which can be stored, restore, dumped and controlled in realtime!
In song mode it is possible to dump one or more mixer maps before switching to a new pattern set.

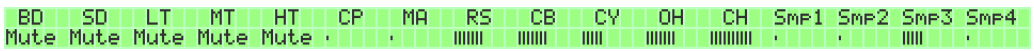
Mute Page

Within the mute page you can quickly mute/unmute tracks with the 16 GP buttons:



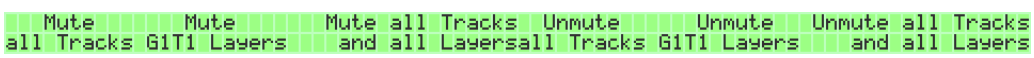
Each track has an animated VU meter to display the MIDI activity.

In addition, it's possible to mute individual parameter layers or drum instruments of a track by pressing&holding the Mute button:



Hot tip: nice breaks can be realized by activating SOLO and selecting multiple tracks - one after another - while the sequencer is playing. This technique is demonstrated at 2:44 of the Session #3 Video.

By pressing the ALL button in this page, some special shortcuts are available:



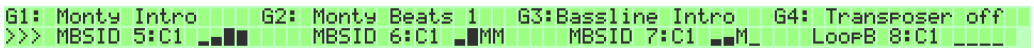
This page allows you to Mute or Unmute all tracks, all layers of the selected track, or all tracks and layers with a single push on the button.

It's possible to synchronize Mutes and Unmutes to a selectable measure of 1..256 steps. This feature is inspired from the "MIDI Clip Launcher" of Ableton Live and can be enabled in the Utility->Options page! Whenever a GP button is pressed, the Mute won't take place immediately, but synchronized to the measure. A countdown will be displayed under the track name to inform you about an ongoing mute/unmute.

With synchronisation enabled, it's sometimes preferable to bypass this option for an immediate mute/unmute. This can be achieved by activating the FAST button function.

Pattern Page

Within the pattern page you can quickly change the patterns of the four available track groups:



The GP buttons and the track buttons have a special function within this menu page to improve the handling:

- **Track buttons:** select between one of four track groups:
  - **Group #1:** plays Track 1-4
  - **Group #2:** plays Track 5-8
  - **Group #3:** plays Track 9-12
  - **Group #4:** plays Track 13-16
- **GP buttons:** the 64 patterns are enumerated from A1 to H8. The 8 buttons at the left side switch between A-H, the 8 buttons at the right side are used to select the pattern number (1-8).

Patterns can be changed with four of the rotary encoders as well. In addition, four rotary encoders allow to select the BankStick from which the pattern is loaded.

Each track has a small vertical bar which displays the MIDI activity while the sequencer is playing.

Song Page

This page has two purposes - one purpose is to store pattern sets, mutes, tempo, mixer maps, etc... for all four groups which can be quickly recalled by pressing a GP button. This is the so called "Phrase Mode" (see below)

The second (main) purpose is to chain and loop pattern sets without user interaction. You can toggle between Song and Phrase Mode with GP Encoder #8 or #9

- **Song:** currently 16 songs can be stored into a dedicated BankStick. Support for 32 songs is planned (will require a 64k BankStick!)
- **Pos:** the song position - 128 positions are available, they are enumerated from A1..P8
- **Action:** defines what should be done when this song position is reached:
  - **Stop:** sequencer will be stopped.
  - **x1..x16:** specified Pattern set will be played the given number of cycles (x1..x16). The pattern for each group (G1..G4) can be specified at the right side of the "action" item. If "-:--" is selected instead of the pattern number, the pattern won't be changed for this song step.
  - **Jump Pos:** sequencer jumps to the specified position - allows to set loop points
  - **Jump Song:** sequencer jumps to the specified song
  - **Mixer:** the specified mixer map will be dumped. The sequencer will immediately continue with the next song position
  - **Tempo:** tempo will change by given BPM rate and ramp time
  - **Mutes:** allows to set/clear track mutes

For a fast usage the Track and Layer buttons have a special function in this page: the Track buttons select the pattern group G1..G4, Layer button A sets the cursor to the "Song" item, Layer button B selects the "Position" item, Layer button C selects the "Action" item.

Song mode is demonstrated in the Session #2 video

Back to Phrase Mode: select the "Position" item by pushing Parameter Layer button B. By pushing a GP button, the sequencer will execute the action defined at song position A1, B1, C1..P1 (16 possible actions). If a pattern set or mixer map is defined at this song position, the sequencer will change to it and continue as normal - since we are not in song mode, the next song positions won't be processed.

Phrases can also be combined with one or more mixer maps. In this case the first step (A1, B1, C1, ...) has to be assigned to a Mixer Map Action, whose content will be dumped out. The sequencer will go to the next song position, and check for a Mixer Map again. Once it has reached a position with a pattern set, it will change to the new set and give back control over pattern changes to the user.

On the same way it's possible to control Mutes and tempo.

When the SELECT button is pressed, a utility page will be displayed:

```
Song  Pos     Utility Functions          Phrase                Take over current
  1    A1  Copy Paste Clr Ins. Del.       Mode                Patterns into song
```

This page allows:

- to change song number and position (like in the main page)
- to Copy/Paste a song position
- to clear a song position
- to insert an empty item into the current song position
- to delete the current song position (following positions will be shifted to the current position)
- to change between Phrase and Song Mode
- to take copy the currently played pattern set into the song position

In song mode one additional item is available:

```
Song  Pos     Utility Functions          Song   GuideTrack     Take over current
  1    A1  Copy Paste Clr Ins. Del.       Mode      G1T1        Patterns into song
```

- the optional **Guide Track** defines the loop length of a song position.
  Once the last loop has been played, all tracks will be synchronized to step 1.
  This allows to program breaks with a step length which is independent from the measure.
  Here a very helpful explanation of this feature from Jjonas.

Disk Page (Shortcut: UTILITY (F1)->Disk)

This page provides special functions for the SD Card:

```
   Sessions              MIDI Files
Import  Export       Import  Export  Play
```

- **Session Import:** allows to copy one or multiple patterns/songs/mixer maps/grooves/configs/bookmarks from another session:

```
Select Source Session (10 found)          Type   Source  Destination
 20100309  JAMS       AMBIENT   MEDLEY   Patterns 1:A1-1:A8 1:A1-1:A8 IMPORT EXIT
```

- **Session Export:** allows to copy one or multiple patterns/songs/mixer maps/grooves/configs/bookmarks into another session:

```
Select Destination Session (10 found)     Type   Source  Destination
 20100309  JAMS       AMBIENT   MEDLEY   Patterns 1:A1-1:A8 1:A1-1:A8 EXPORT EXIT
```

- **MIDI File Import:** allows to import MIDI files, stored in the midi/ directory of your SD Card.

```
Select MIDI File (10 files found)          Mode Max.Layers Resolution
 MYTUNE1   MYTUNE2   MYDRUM1   MYDRUM2  Note       8         16th   (8 Bars)  EXIT
```

  All tracks are imported at once (up to 16) in the same order they are stored in the .mid file.
  Accordingly, track assignments can be done within the .mid file before it is imported (e.g. edit the .mid file with your DAW)
  Currently only MIDI Notes and drums are supported (no CCs, no Pitchbender).
  To import drum tracks, change the import mode from "Note" to "Drum". This mode especially allows to control the velocity of each step separately.
  Currently drum instruments are only mapped to a pre-selection of 4/8/16 notes - this map cannot be customized yet!
  Since MIDIbox SEQ is a step sequencer, notes will be quantised with a selectable resolution (16th, 32th or 64th).
  Also the number of layers/drum instruments is selectable (4, 8 or 16).
  Than more layers are available, than more notes can be played at the same step. In "Note"

mode, all notes share the same velocity and length value, in "Drum" mode each step and instrument has a dedicated velocity value.
If the imported track contains different velocity or length values for polyphonic played notes, and this characteristic is important, it is recommended to split the track into multiple pieces (e.g. for long and for short notes) and to import them into separate MBSEQ tracks.
Another hint: if notes of the imported track don't start exactly at the 16th/32th/64th note position (e.g. because they have a "swing" feel), it is recommended to quantize the notes in a DAW before the import.
The swing feel can be added again after the import (GROOVE page).
All tracks will be initialized depending on the selected resolution and layers before the import is started. Than higher the resolution, or than more layers are selected, than less bars can be imported (number of bars is displayed on page).
The MIDI port will always be set to DEFAULT during import. The MIDI channel will be set to the channel of the first played note (for each track separately).
MIDI Files can be imported while the sequencer is running. This allows you to search for a certain file, but also to try different parameters during runtime.
Here two MP3 examples of patterns that have been imported, and that are played by MBSEQ (and not by a MIDI player...).

Virus-like tunes:

Drum pattern at 64th resolution:

- **MIDI File Export:** this function allows you to export Tracks, Patterns or Songs to a MIDI file, stored in the midi/ directory of your SD Card. This directory has to be created with a computer if it doesn't already exist.

```
 Export              Measures StepsPerM
All Groups              1       16   Continue                              EXIT
```

  By pressing the button a dialog page will be entered which allows to select the options:
  - **Export:** use the GP encoder below this item to select "All Groups", "Group" (with pattern selection), "Track" (with track selection) or "Song" (with song selection).
  - **Measures:** specify, how many measures should be exported
  - **Steps Per Measure:** specify the number of steps per measure.
  - **Continue:** continues the dialog
  - **EXIT:** cancels the dialog and returns to the DISK page.

```
Please enter Filename:                        /midi/<MYSONG5 >.mid
.,!1 ABC2 DEF3 GHI4 JKL5 MNO6 PQRS7 TUV8WXYZ9 -_ 0  Char <>  Del Ins   SAVE EXIT
```

  After "Continue" has been pressed, the next dialog page appears which asks you to enter the filename.

```
                                      File '/midi/MYSONG5.mid' already exists
                                      Overwrite? YES  NO                 EXIT
```

  If the file already exists, the dialog will ask you if it should be overwritten (YES), or if a new filename should be selected (NO).
  Thereafter the .mid file will be generated and written into the midi/ directory.
- **MIDI File Import:** allows you to play a MIDI file with following options:

```
Select MIDI File (10 files found)        Start Loop Playmode  Port
 MYSONG1   MYSONG2   MYSONG3   MYSONG4  Play   on  exclusive Def.          EXIT
```

  - **Left page:** displays the MIDI files found in the midi/ directory. Use a GP encoder to scroll the page if more than 4 files have been found. Use a GP button to select (and play) the file.
  - **Start/Stop Play:** plays/stops the MIDI file playback.
  - **Loop:** enables the Loop function, so that the file will be automatically replayed once it reaches the end
  - **Playmode:** with "exclusive" the MIDI file will be played instead of the sequencer tracks, with "parallel" it will be played together with the 16 sequencer tracks. Especially the parallel function is very powerful, as it allows you to play some static, prepared tracks (e.g. drum loops, melody lines, or a song that you previously exported) together with the 16 "normal" sequencer tracks which can be changed interactively!
  - **Port:** the MIDI port to which the events of the .mid file will be sent.
  - **EXIT:** exits to the DISK page.

```
   Sessions              MIDI Files
Import  Export      Import  Export  Play
```

Port Mute Page (Shortcut: UTILITY (F1)->PMute)

MIDI ports can be individually disabled - requested by several users:

```
Def. USB1 USB2 USB3 USB4 OUT1 OUT2 OUT3 OUT4 IIC1 IIC2 IIC3 IIC4 AOUT Bus1 Bus2
  o    o    o    o    o    o    o    o    o    o    o    o    o    o    o    o
```

Fx Menu (Shortcut: MENU->Fx

Menu to enter the local/global effects pages which are described below:

```
Local Fx Functions:                  Global Fx Functions:
Echo Hum. Limit LFO Dupl.            Loop Scale
```

Fx Echo

This is one of the main new features of MIDIbox SEQ V4 - thanks to the mighty MIDI event scheduler the echo function works very accurate, even on quick parameter or pattern changes:

```
Trk.  Echo  Repeats   Delay   Vel.Level  FB Velocity  Note   Gatelen.    Ticks
G1T1   on       3      16        75%         75%      + 0     100%       100%
```

- **Echo:** allows to enable/disable the echo Fx without touching the repeat value (Repeat=0 has the same effect).
- **Repeats:** selects how many times a played MIDI event should be repeated (0..15).
- **Delay:** defines the delay between each repeat (64T, 64, 32T, 64d, 32, 16T, 32d, 16, 8T, 16d, 8, 4T, 8d, 4, 2T, 4d, 2, 1T, 2d, 1, Rnd1 and Rnd2)
- **Velocity Level:** defines the initial velocity level of the first repeating note
- **Feedback Velocity:** defines the gradual change of the velocity level for each repeat between 0..200%
- **Feedback Note:** defines the gradual change of note steps on each repeat between -24..+24, optionally random (RND).
  Very powerful in conjunction with Force-to-Scale!!!
- **Gatelength:** defines the gradual change of the gatelength on each repeat between 0..200%
- **Ticks:** defines the gradual change of the delay between each repeat between 0..200%

Demo: see "Fx Dupl"

Fx Humanizer

Allows you to select following options:

```
Trk.  Intensity     Note Vel/CC Length
G1T1      0          off   off   off
```

- **Rnd. Intensity:** this is some kind of "humanizer" which allows to vary the parameters of a MIDI event randomly. The higher the "intensity" value, the higher the random variation.
- **Note:** Enables/Disables the random variation of key values
- **Vel/CC:** Enables/Disables the random variation of velocity or CC values
- **Length:** Enables/Disables the random variation of the gatelength

TODO MP3

Allows you to limit the note range for each indiviual track:

Fx Limiter

```
Trk. Lower/Upper Note Limit
G1T1  C-2  B-4
```

If a note is outside the range, it will be wrapped around the octave for musical results.

TODO MP3

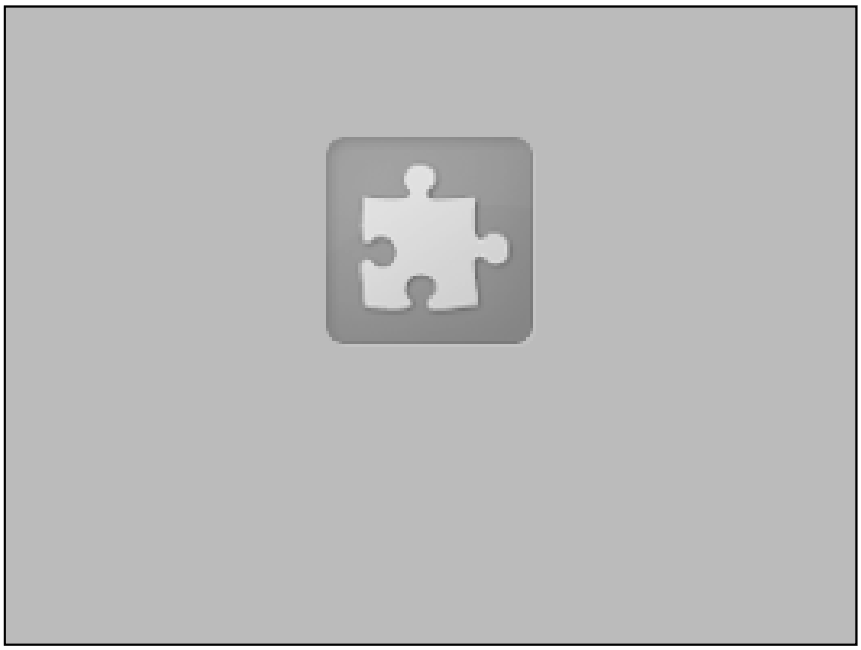
Fx LFO

The LFO effect allows to automate periodical changes of various parameters:

```
Trk. Wave Amp. Phs. Steps Rst OneShot   Note Vel. Len.  CC   ExtraCC# Offs. PPQN
G1T1  off   12   0%   16   16  off       on   off  off  off   ---  on   64   96
```

- **Wave:** selects the waveform: Sine, Triangle, Sawtooth, Pulse 5%..95%
- **Amplitude:** selects the amplitude from -128 to +127
- **Phase:** selects the waveform phase after the LFO has been reset
- **Steps:** selects the period of the LFO waveform synchronized to the steps of a track (1..256) - this parameter automatically synchronizes to the MIDI clock depending on the BPM rate
- **Reset:** defines after how many steps the LFO should be reset
- **OneShort:** if enabled, the LFO waveform will only be processed once until the next reset
- **Note:** applies the LFO waveform over all Note values of the track (use low amplitudes values!) - especially interesting in conjunction with Force-to-Scale and the Limiter Fx!
- **Velocity:** applies the LFO waveform over the Velocity value of the track (use high amplitudes values!)
- **Length:** applies the LFO waveform over the Gatelength (why not...)
- **Extra CC#:** allows to define an CC number which will directly send the LFO value with GP13, allows to enable/disable the Extra CC with GP14
- **Offset:** allows to increase/decrease the LFO offset within the range of 0.127
- **PPQN:** defines the update rate of the CC parameter (3..384 ppqn). Than higher the value, than more MIDI traffic will be produced! A value >= 96 ppqn is only recommended for virtual synths controlled via MIDI USB!

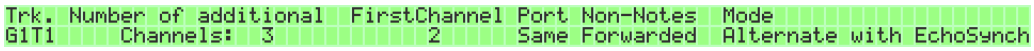
In following demo video (which you probably already know) the live usage of a LFO is demonstrated with different waveforms, frequencies, CC modulation, Echo Fx, transposer and force-to-scale (LFO part starts at 2:05).



MIDIbox SEQ V4 Teaser #2 from Thorsten Klose on Vimeo.

Fx Dupl(icate)

The duplication effect sends MIDI notes to multiple MIDI channels of a given MIDI port (which can be different from the MIDI port assigned in the Track Event page). Use this effect to play (equal) monophonic synths like a polyphonic synth, or to trigger notes with different timbres.
This feature also works together with the AOUT port to support polyphonic play of analog synths!



- **Number of additional channels:** as the name says. The effect will be disabled with value 0, and enabled with a value > 0.
- **First Channel:** specifies the first channel to which additional note events should be forwarded. E.g. with 3 channels starting at Channel 2, Notes will be forwarded to the original MIDI channel configured in the Track Event page + Channel 2, 3 and 4.
- **Port:** selects the MIDI port to which the additional notes should be forwarded. With "Same" the events will be sent to the MIDI port configured in the Track Event page, with the remaining port settings the MIDI notes will be sent to the selected MIDI port.
- **Non-Notes:** specifies what should happen with Non-Note events (such as CCs, PitchBender, Channel Pressure, Program Change): they can be filtered, or forwarded to all additional MIDI channels.
- **Mode:** selects the behaviour of this Fx:
  - **Forward to all Channels:** notes will be directly forwarded to all MIDI channels
  - **Alternate Channels:** only one MIDI event will be generated, and with each note the next MIDI channel will be selected.
    E.g. with Original MIDI Channel (in Track Event Page) 1, Number of additional Channels 3, First MIDI Channel 2, the effect will cycle between MIDI Channel 1, 2, 3 and 4
  - **Alternate with Echo Synch:** alternates only notes which are played by the Echo Fx
  - **Random:** each Note will be sent to a randomly selected MIDI channel. Either the original MIDI channel (configured in the Track Event page), or the additional channel(s) of this Fx

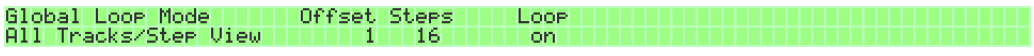
Here a demo of the Fx:

A single track plays a simple sequence which isn't changed during the whole demo.
Only some Fx parameters are changed.

- 0:00 - single channel plays the sequence
- 0:14 - alternating between two channels. The second channel plays the same instrument with a different timbre
- 0:21 - alternating between four channels, each instrument has a different timbre
- 0:28 - switching between channels in random order
- 0:36 - enabled Echo Fx with 3 repeats an 8d Delay
- 0:50 - enabled LFO Fx with Saw Waveform, Amp 14, 16 Steps, Reset after 16th step - note that Force-to-Scale is enabled
- 1:02 - changing some LFO parameters
- 1:15 - changing Note steps for each Echo tap between 0, +2 and +3

Fx Loop

Is this an "effect" or a "tool" which is useful while editing long sequences... decide by yourself:



- **Global Loop Mode:** following modes are supported:
  - **All Tracks/Step View:** loops all tracks around the visible step view
  - **All Tracks/Static View:** loops all tracks around the selected Offset/Step range
  - **Selected Track/Step View:** loops the selected track around the visible step view
  - **Selected Track/Static View:** loops the selected track around the selected Offset/Step range
- **Loop:** enables/disables the Loop function. Can alternatively be switched via MENU+SCRUB buttons.

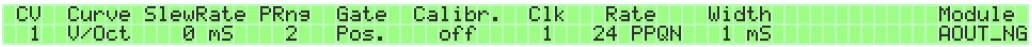
Fx Scale

This page allows to configure the scale which should be used by the Force-to-Scale function:

- **Control:** the scale and root note can either be controlled globally or pattern based. In distance to the global scale/root (which is stored in the global configuration of a session), the pattern based scale/root is located within the G1/G2/G3 or G4 pattern and will be automatically changed when a new pattern is selected.
  Only one group can control the scale and root note - it can be selected with this menu item.
- **Root:** selects the root note (C, C#, D, D#, ..., B) of the scale. Optionally the root note can be directly controlled from a MIDI keyboard. In this case it is the base note which is also forwarded to the transposer. KEYB is the default setting.
- **Selected Scale:** allows you to select one of 166 (!!!) scales, which are used by all tracks with enabled "force scale" option.
  Scales are counted from zero so that the numbers are matching with the CC#3 value.
  Thanks to Stryd One for providing all the scale definitions! :-)

Sidenote reg. the global scale: when "Global" control mode is selected, the scale can also be changed from an external MIDI device via CC#3, and especially via internal loopback. This means, that a track can change the scale dynamically if it outputs CC#3s to the Loopback port.

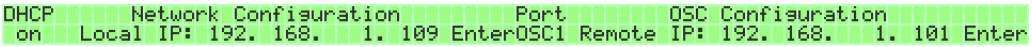
CV Configuration Page



This page allows to select the AOUT/AOUT_LC/AOUT_NG interface, to configure CV channel and gate parameters, and to configure the DIN Sync Clock output.

- **CV:** selects the CV channel (1..8)
- **Curve:** selects the output curve: V/Oct, Hz/V, Inverted
- **Slew Rate:** allows to configure a slew rate (slack) in the range of 0..255 mS
- **PRng:** sets the pitch range for pitch bender events (normally 2, use 12 or 24 to sweep over one, resp. two octaves)
- **Gate:** sets the gate polarity (positive or negative)
- **Calibr.:** allows to force different output voltages for calibration (Min/Middle/Max/1V, 2V, 4V, 8V)
- **Clk:** selects 1 of 8 clock outputs (available at a dedicated DOUT shift registered which has been configured with the CLK_SR parameter in the MBSEQ_HW.V4 file). Each clock has an individual clock divider, or can optionally be used to output a Start/Stop signal
- **Rate:** defines the output rate of the selected clock output (1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96, 192, 384 ppqn and Start/Stop)
- **Width:** sets the pulsewidth of the clock output signal (1..255 mS)
- **Module:** selects the AOUT module which is connected to J19 of the core module (AOUT, AOUT_LC or AOUT_NG)

Ethernet (OSC) Page



This page allows to configure the IP settings of the MBHP_ETH interface, and the remote settings of the OSC server.

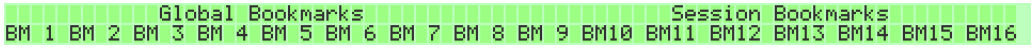
Background informations about the OSC integration into MIDIbox applications can be found at this page.

All changes won't take effect immediately, but have to be confirmed by pressing one of the "Enter" soft-buttons (GP8 and GP16)! They will be stored in the global configuration file /MBSEQ_GC.V4 on SD Card.

- **DHCP:** if enabled, the remote IP, network mask and gateway will be requested from a DHCP server in the network. If disabled, these settings can be entered manually

- **Ethernet Configuration Parameters:**
  - **Local IP:** (only if DHCP not enabled): sets the IP of MIDIbox SEQ and should be unique in the network
  - **Netmask:** (only if DHCP not enabled): sets the netmask of your LAN
  - **Gateway:** (only if DHCP not enabled): sets the gateway IP (default router)
- **OSC Configuration Parameters:**
  - **OSC Port:** 4 ports are available (OSC1..OSC4), each one can be configured with a different IP and port settings.
  - **Remote IP:** sets the IP of the host to which OSC packets should be sent/received
  - **Remote Port:** sets the port number to which OSC packets will be sent
  - **Local Port:** sets the port number over which OSC packets will be received
  - **Tx Mode:** selects the transfer mode (see this page for supported formats)

Bookmark Page



Ok, now you've probably walked through so many pages, how to remember the most favourite ones? Use Bookmarks!
The bookmark pages is entered by pressing MENU+SELECT, or a dedicated button which is assigned in your MBSEQ_HW.V4 file (e.g. the hwcfg/wilba/MBSEQ_HW.V4 file presets this functions to the F1 button)

Inside this menu, press a GP button (shortly) to recall a bookmark, press&hold a GP button for 3 seconds to store a bookmark

The bookmark function stores following UI settings:

- Bookmark name
- Current page
- Group
- Tracks
- Mutes
- Parameter Layer
- Trigger Layer
- Instrument
- Step View
- Step
- Edit View
- Solo/All/Fast/Metronome/Loop/Follow button mode

The first 8 "global" Bookmarks are stored into the MBSEQ_BM.V4 file of the root directory, the remaining bookmarks are stored into the MBSEQ_BM.V4 file of the session directory. Both files can be edited with a common text editor.
This is the only way to change a bookmark name (5 characters)

It's possible to prevent, that a certain UI parameter will be overwritten by a bookmark. This can (only) be done by editing the MBSEQ_BM.V4 file:
Just replace the '+' sign at the beginning of the parameter name by a '-' sign.

Typical configuration slot:

```
####################
Slot 1
Name Def.
####################
+Page EDIT
+Group 1
+Tracks 1000000000000000
+Mutes 0000000000000000
+ParLayer A
```

```
+TrgLayer A
+Instrument 1
+StepView 1
+Step 1
+EditView 0
+Solo 0
+All 0
+Fast 0
+Metronome 0
+LoopMode 0
+FollowMode 0
```

You could turn this into an "all tracks selected" bookmark by writing:

```
####################
Slot 1
Name AllT
####################
-Page EDIT
-Group 1
+Tracks 1111111111111111
-Mutes 0000000000000000
-ParLayer A
-TrgLayer A
-Instrument 1
-StepView 1
-Step 1
-EditView 0
-Solo 0
-All 0
-Fast 0
-Metronome 0
-LoopMode 0
-FollowMode 0
```

This will only change the tracks, all other parameters won't be touched!

Last update: 2015-11-08