

# midiphy Matrix

Ultimate Mechanical Grid Controller

## USER MANUAL

Version 1.01 2021-11-20

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**midiphy**  
dream it yourself

[www.midiphy.com](http://www.midiphy.com)



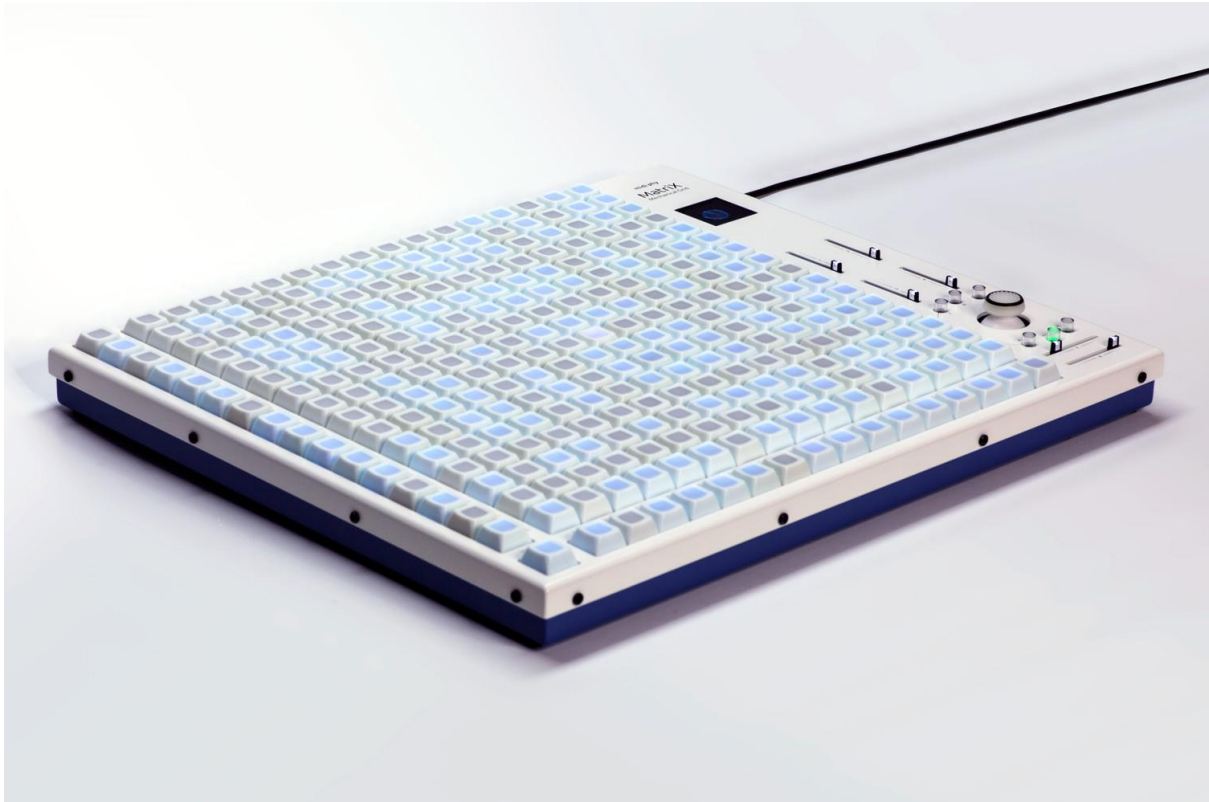
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# 1. Welcome to Matrix!

Matrix extends midiphy sequencers using a massive button LED matrix (BLM) user interface. Matrix requires either a midiphy LoopA or SEQ v4+, or both!



## 2. Features

- 289 (17x17) RGB-backlit and light|shielded mechanical keys with custom keycaps for optimal light dispersion.
- Full-color 128x128 high-end OLED screen running at 60Hz for info and graphical sequence/clip previewing.
- Sliders and extra buttons for parameter entry and additional functions.
- Two BLM ports and a dedicated switch to alternate between two connected sequencers at any time.
- Dedicated navigation joystick for moving selections, scrolling through clips/sequences and more!
- High performance STM32F4 MCU using RTOS as a software base for a responsive and fluid user experience.
- Full midiphy SEQ v4+ and MIDibox SEQ v4 support - fully compatible with existing BLM 16x16+X protocol.
- Enhanced LoopA support:
  - Enter or edit sequences with pan and zoom controls (microtiming)
  - Select from ~160 musical scales
  - Isomorphic keyboard layout with a force-to-scale option for easy generation of melodies and chords difficult to play on a traditional instrument

## 3. Quickstart

This quick tutorial is made for using MatriX with a midiphy LoopA. The following steps explain the basic hardware concepts to produce a quick tune.

1. Connect the MatriX BLM1 and LoopA BLM ports using a slimline 5-pin MIDI cable. The cable should be fully wired through, which is normally the case for DIN cables.
2. Power up both LoopA and MatriX, which should display a "LoopA connected" message.
3. By default, a MatriX connected to LoopA will start in Notes mode.
4. Prepare a LoopA track and turn on force-to-scale (FTS on the FX screen).
5. Simultaneously push the MatriX shift and extra column key 15 to switch to Scale mode. Here, choose any musical scale with the lower 160 MatriX keys. "Pentatonic Neutral" (scale 9) is something nice to start with. Change the root note with the MatriX X slider.
6. Simultaneously push the MatriX shift and extra column key 14 to switch to Keys Mode. An isomorphic keyboard view with integrated scaling enables instant jamming (if necessary, enable LoopA Track Forwarding (Fwd On) to send notes to a connected synthesizer).

7. Press arm and run/stop on LoopA to arm the sequencer and start recording. Enter material to record using Keys Mode on MatriX.
8. Now use shift and extra column key 16 to switch into Notes Mode. Pan around the sequence using the joystick, scale the visible area with the X and Y sliders and graphically enter or remove notes (using the chosen musical scale). This mode also allows editing of entered notes: push and hold any illuminated keys to modify the selected notes with sliders 1-4 and/or relocate them using the joystick.
9. Tap the shift key to enter the macro screen. Mute/unmute any tracks, select a new clip to record into, adjust track volumes and directly access beatloop and transposition settings. Try to enter a drum pattern for example.

Enjoy MatriX!

## 4. Connector panel

### 4.1 MatriX connectors/ports

The rear-panel connectors are pictured below:



- BLM1 and BLM2 are bidirectional MIDI ports that connect to two sequencers, e.g. to a midiphy SEQ v4+ and/or LoopA. Press the dedicated button (↔) to switch between these ports and control the connected device at any time.

- The USB port is used mainly for uploading new MatriX firmware from MIOS Studio. It is also possible to access the internal SD card e.g., for manual adjustments of configuration files. As MatriX offers an intuitive configuration system, this should only be necessary for power users.
- The 12 VDC supply socket provides MatriX with power. A capable PSU e.g., a 12V/5A (60W) switching power supply with a 5.5/2.5mm barrel connector (positive center, negative barrel) is required. As midiphy users are located all over the world, we could not find a "universal PSU", but these are commonly available. In Germany we can highly recommend the Leicke 12V 5A 60W PSU [available on amazon.de](#).
- The reset switch is normally not required. Should a newly developed beta firmware version crash, use it to reset MatriX (or simply power cycle the unit by unplugging the 12V supply cable).

## 4.2 Connection to midiphy sequencers

Connect an appropriate power supply to MatriX. The order of power-up is not critical.

MatriX communicates with midiphy sequencers over bidirectional BLM ports. Although these DIN sockets are demarcated as eight-pin connectors, a slimline five-pin DIN cable works well, as long as it is wired through using all pins.

For midiphy LoopA:

- Connect a DIN cable between the two BLM ports. A connection should be established automatically.

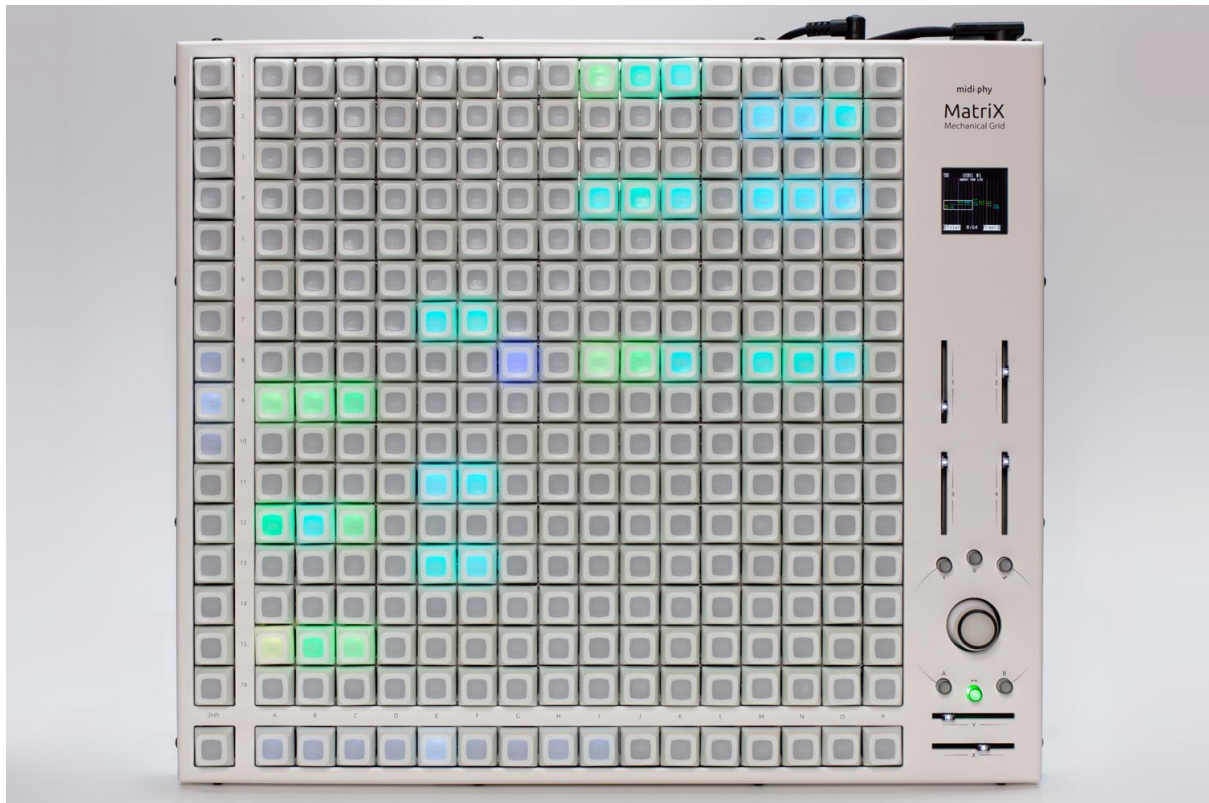
For midiphy SEQ v4+

- Connect a DIN cable between the BLM ports (marked as O4/BLM on the SEQ v4+).
- Configure the SEQ v4+ to receive on port IN4:
  - Menu > MIDI > Misc.
- A "found" notification indicates a successful connection.
- It might be necessary to save a session to store the configuration.



## 5. User interface overview

The user interface consists of 17x17 (289) backlit mechanical keys, a full-color OLED, six sliders, an analog joystick and six additional buttons

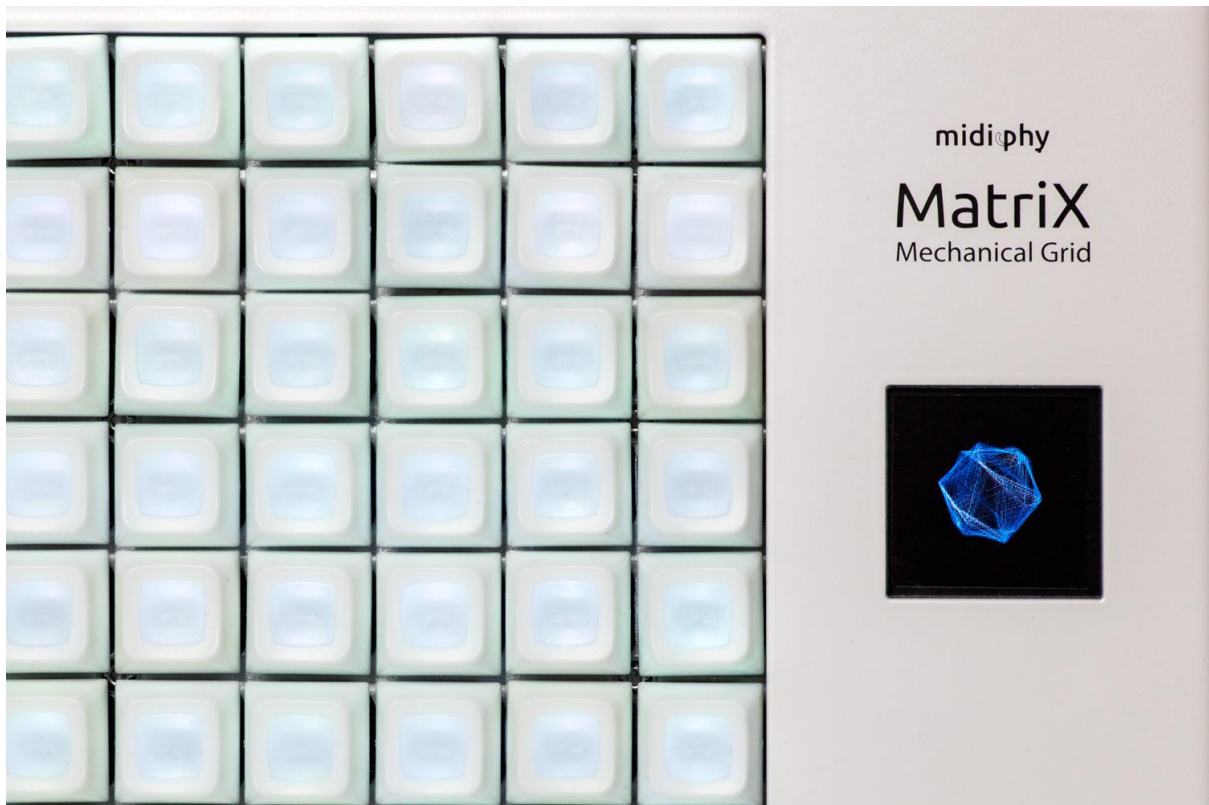


### 5.1 16x16 RGB-illuminated keys

Key functions change depending on the selected mode. See the mode descriptions for more details.

### 5.2 Full-color OLED

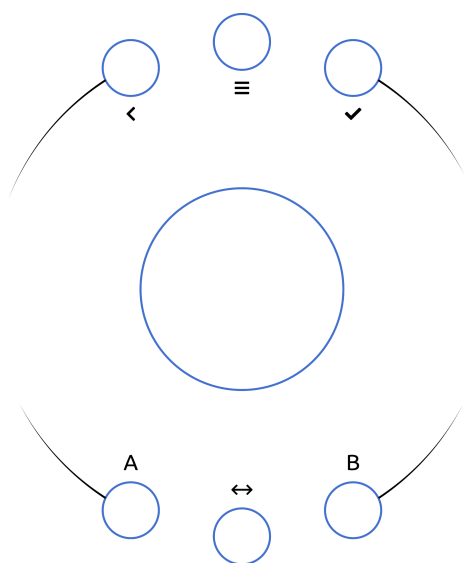
The OLED displays context-sensitive information depending on the selected mode or menu.



### 5.3 Sliders and joystick

These controls are used for parameter entry or navigation within menus and in certain modes. Sliders can also be programmed to send continuous controller (CC) data in certain situations. The X and Y sliders usually control scaling or selection of the main 16x16 keys.

### 5.4 Menu buttons



Six round buttons are used for menu navigation and other functions:

- < Exit the menu or navigate backwards
- ≡ Enter the menu
- ✓ Confirm selection
- A Often controls lower-left parameter displayed on OLED
- ↔ Switch BLM ports: green LED = BLM1; red LED = BLM2
- B Often controls lower-right parameter displayed on OLED

## 5.5 Shift key and extra row and column

The behavior is context sensitive (see mode descriptions). The most common usage for the extra column is to select the mode in combination with the shift key (the lower-left key of the 17x17 matrix).

A great benefit of the extra row and column is that the inner 16x16 area remains usable in its entirety for editing functions.

## 6. Menu system

The following configuration items are accessed by pressing the menu button. The OLED indicates the active menu and any actionable items. Navigate by using the joystick and confirm entry into the menu page with the corresponding button. Press the back button to exit the menu.

### 6.1 Brightness

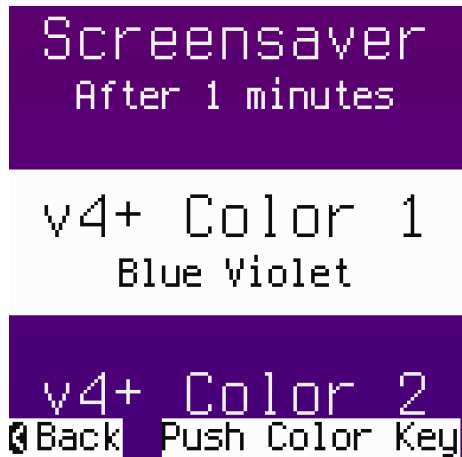
Change the 17x17 key matrix LED brightness with the X slider. Simply exit the menu when the desired brightness is set.



The screenshot above shows the LED brightness set to 100%. Move the X slider to adjust, then exit the menu system.

## 6.2 Setup

Configure general MatriX settings such as the screen-saver time and v4+ color scheme. Settings are permanently stored to the micro SD card. To reset the MatriX to "factory" defaults, just delete the "setup.txt" file in the root directory of the micro SD card. Access the micro SD card by using the file browser within MIOS Studio (connected to a computer over USB).



*The screenshot above shows the SEQ v4+ mode Color 1 set to "Blue Violet".*

Color configuration is made directly on the 16x16 keys by pushing any key from the palette in the lower section. The upper section lights up in the selected color.



*Color palette for SEQ v4+ key illumination. Push any key to set SEQ v4+ Color 1 or Color 2.*

## 6.3 Analog calibration

Calibration should be performed at least once after building or any time that you notice that the sliders or joystick are short of their full range.

Calibration data is stored on the micro SD card in setup.txt. Either copy the file or simply recalibrate if the card is replaced.

### 6.3.1 Calibration procedure

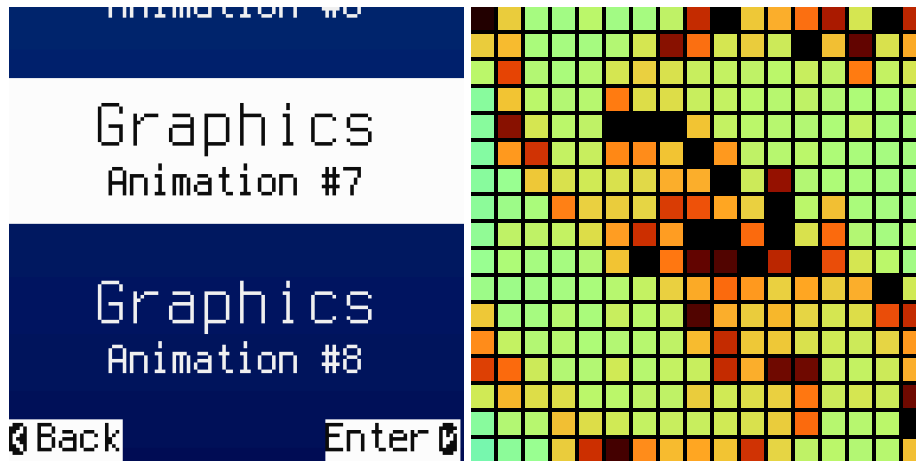
1. Enter the calibration screen from the menu  
*the OLED will display eight red bars corresponding to eight analog inputs*
2. Move each slider back and forth to calibrate the end positions  
*the 16x16 keys flash green if a new min/max value was detected*
3. Rotate the joystick around its full range  
*the 16x16 keys flash green if a new min/max value was detected*
4. Continue to test the ranges of the sliders and joystick until the 16x16 keys no longer flash green
5. Once all calibration data are stable, press "commit" to save all changes.
6. Press "cancel" at any point before committing to revert to the previous settings.

```
Calibrate
MOVE ANALOG AXES TO ALL EXTREMES
0 -511 (-511 to 512)
0 -511 (-511 to 512)
0 458 (-511 to 512)
0 -511 (-511 to 506)
JX 0 (-425 to 420)
JY 0 (-403 to 436)
0 -469 (-469 to 462)
0 -469 (-469 to 489)
[Q] Cancel [Y] Commit [Q]
```

The screenshot above illustrates the calibration screen with all eight analog inputs correctly adjusted. Pressing "Commit" stores the calibration data.

## 6.4 Demos

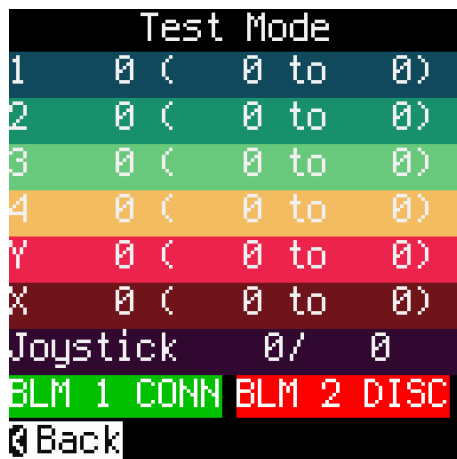
Contains graphical demonstrations of Matrix on both the 17x17 keys and OLED.



Keyboard LED animations and real-time mandelbrot fractal animations are available within the Demos section.

## 6.5 Test mode

Test mode automatically launches if a micro SD card is not present but can be accessed at any point from the menu.



This mode verifies that the hardware functions correctly. In test mode

- sliders light up all LEDs with varying brightness and values are displayed on the OLED.
- panning the joystick illuminates its current axial coordinate and turns off LEDs after movement.
- pressing a key temporarily lights up that particular key and others within +/- 7 spaces.

- BLM ports 1 and 2 are monitored and the current status is displayed on the OLED:
  - green "CONN" indicates a valid connection
  - red "DISC" indicates no connection

## 7. midiphy LoopA support

LoopA is a graphical noteroll sequencer and excels at realtime recording, modification and looping playback of keyboard sequences and arrangement of these clips in scenes.

MatriX enhances LoopA with graphical clip and scene launching as well as extensive clip editing functions. MatriX transforms LoopA into an intuitive grid-based sequencer with great haptic and visual feedback using backlit mechanical keys.

All editing functionality is provided through dedicated modes, which are themselves accessed by pressing the shift key and one extra column key (see below). MatriX enters Notes mode by default when LoopA connects to MatriX.

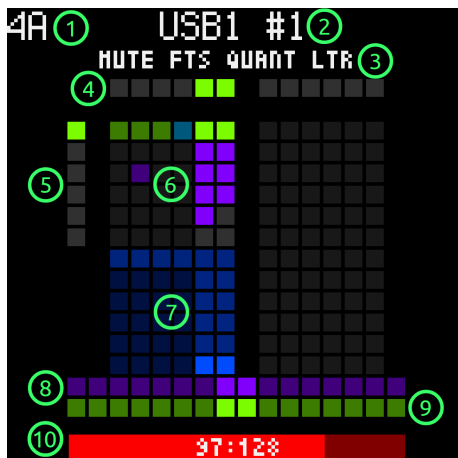
### 7.1 Macro screen (clip and mode navigation)

Enter and remain on the Macro screen by tapping the shift key. Press the shift key again for any duration to return to the previous mode (or to change to a different mode). This view is great for two-handed control of all clips and tracks during performance.

To jump between the current mode and the Macro screen, hold the shift key down and make any desired changes. Release to jump back to the previous mode. This is particularly useful to get an overview of clips or LiveFX, or to make quick changes and jump back to another mode.

The Macro screen gives direct and uncluttered access to:

- Track mutes/unmutes
- Scene selection (all tracks)
- Individual 6x6 clip selection and scene progression
- Track volume mixer
- Direct transposition and beatloop selection with individual keys
- MatriX mode selection, LoopA commands and clip toggles



- 1) Active track and scene
- 2) MIDI port and channel (or user instrument)
- 3) Active clip status (see below for explanations)
- 4) Direct track mutes
- 5) Direct scene selectors
- 6) Clip matrix
- 7) Track volume mixer
- 8) Current live transpose setting (center = off)
- 9) Current beatloop setting (center = off)
- 10) Active clip loop progress bar: red = armed; green = standard playback

While the Macro screen is active, the left extra column keys are still used to select the current MatriX mode. The bottom extra row keys launch LoopA commands and toggle clip and track settings for the currently active clip.

### 7.1.1 Clip information header



The top-left corner displays the current track and scene. Here track 4, clip A is active.

The top header line names the output port and channel (or the current user instrument if configured).

**Tip:** configure LoopA with custom instrument names to make the port settings more intuitive when switching.

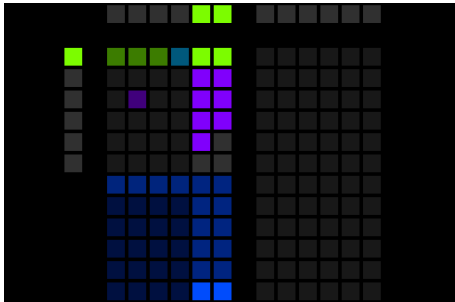
The bottom header line contains clip and track status using the following abbreviations:

Abbreviation	Explanation
MUTE	Track is muted (e.g. on Macro screen)
FTS	Force-to-scale is active for this clip
QUANT	Quantization is active for this clip
DMP	Dampening is active for this clip
FWD	MIDI forwarding is active for this track



LTR	Live transposition is active for this track
SILENT	Track mixer volume for this track is zero

### 7.1.2 Track arrangement



The six LoopA tracks 1-6 correspond to six MatriX key columns, namely C/D/E/F/G/H. This applies to key rows 1-14. Key rows 15 and 16 are handled differently (LiveFX; see below).

### 7.1.3 Track mutes



Row 1 displays the current mute states. Press a mute key to mute the associated track, which also dims the entire column. An unmuted track is colored in chartreuse green.

*In the picture above, tracks 5 and 6 are unmuted.*

### 7.1.4 Clip matrix



MatriX key rows 3-8 indicate the states of each clip. If all currently played clips belong to the same scene, the corresponding column key lights up in chartreuse green.

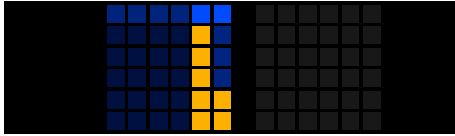
*In the picture above, all tracks are playing scene 1.*

Clips of any scene may be switched for each track at any point in time. The last clip selected will become the active clip and will also become the active track. The active clip is colored deep sky blue.

*In the picture above, clip 4A is active. As track 4 is muted, the active clip indicator is slightly darker.*

Any clip holding note data (that is not currently playing) is shown in purple, whereas empty clips are colored gray until data is present.

### 7.1.5 Track volume mixer



Rows 9-14 act as a volume mixer for each track. The maximum MIDI velocity decreases down the column. When notes are played back, the column height lights up in orange in proportion to note velocity, taking any volume setting into account.

*In the picture above, tracks 5 and 6 are unmuted, set to full volume (“volume bars” all the way up) and are playing back notes.*

**Hot tip:** in addition to the volume mixer keys within the Macro screen, analog sliders **1-4**, **Y** and **X** also function as volume mixers for tracks 1-6 (in this order) and enable finer volume adjustments; **use these sliders to smoothly fade tracks in and out.**

### 7.1.6 Live transpose and beatloop controls



Live transpose and beatloop are located on rows 15 and 16, respectively. Directly select live transposition and beatloop modes using the respective keys Instead of using the Live encoder on LoopA.

*In the picture above, transpose (purple) and beatloop (green) are currently set to their default values (center positions).*

### 7.1.7 Active clip loop progress bar



If the LoopA sequencer engine is running, the progress bar shows the current playback progress of the active clip. Although most settings in the Macro screen are typically synchronized to the next measure, this visual progress bar is helpful to determine the best time to switch settings during performance e.g., live transpose or beatloop, or to select another scene.

The progress bar color switches from green to red if LoopA is armed.

*In the picture above, the active clip is about 75% complete (step 97 of 128).*

### 7.1.8 Mode selection

Within the Macro screen, the keys of the extra column choose the currently active mode:

Extra column key #	Mode selection
14	Keys (keyboard) mode
15	Scale mode
16	Notes mode

More modes are planned for the future!

**Note:** keys close to the shift key enable one-handed switching, so these important modes start at the bottom of the extra column.

### 7.1.9 LoopA commands and active track and clip toggles

On the Macro screen, the extra row keys remotely control LoopA and configure toggles for the currently active track or clip.

The available functions are clustered into three blocks:

1. Sequencer behavior
2. Quick clip editing
3. Clip and track settings

Extra row key	Function
A	Run/stop
B	Arm
C	Engage autoloop recording
D	Toggle metronome
E	(currently no function)
F	Copy
G	Paste
H	Delete
I	Undo

J	(currently no function)
K	Force-to-scale transpose (toggle on/off for active clip)
L	Dampening (toggle on/off for active clip)
M	MIDI forwarding (toggle on/off for active track)
N	Live transpose (toggle on/off for active track)
O	(currently no function)
P	(currently no function)

## 7.2 Notes mode

Notes mode powerfully extends the live-recording capabilities of LoopA to enable the creation of new sequences or to edit existing ones. MatriX offers real-time grid editing of notes within a loop, thus astonishing sequences that would be hard to compose using only a standard keyboard and linear recording methods become effortless and fun to realize.

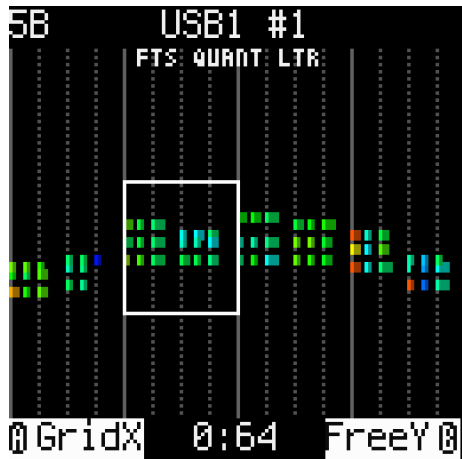
*Enter Notes mode with shift + extra column key 16.*

As the editor area spans a width and height of 16x16 keys, Notes mode features powerful zooming and panning controls to allow precise microadjustment of long recordings. For example, a drumroll could be added to an otherwise unquantized drum recording of minutes in length. Of course, it's also possible to zoom right out and get an instant overview of the whole track.

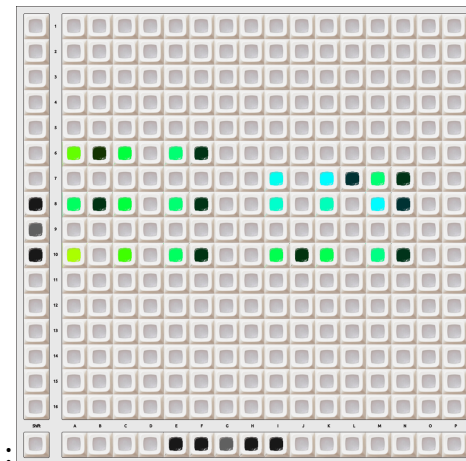
Note editing is enhanced compared to the LoopA note editor: multi-note selections can be defined and freely repositioned, even while the sequencer engine is running! This feature is best used with force-to-scale active to create new sequence variations on the fly.

## 7.2.1 Active area

The active area is denoted with a white outline on the OLED and represents the subregion of the currently active clip:



The following image shows how the 16x16 keys correspond to the outlined region marked in the previous OLED image:

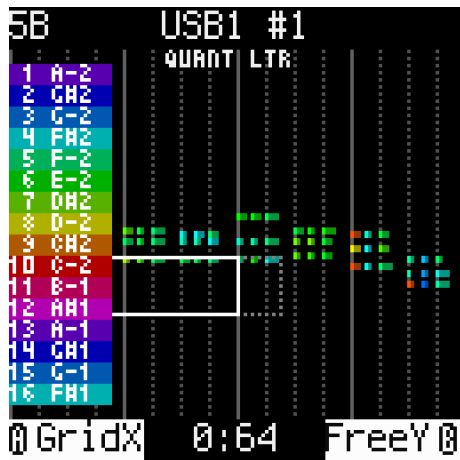


Use the joystick to pan around the visible area and move the X and Y sliders to horizontally and vertically scale the viewable area.

**Tip:** use the extra keyboard row and column for direct navigation within the clip. Press a key or region to jump to an absolute X or Y position instead of using the joystick for relative panning. The extra row and column also indicate the zoom level: a single illuminated key means that the axis is fully zoomed-in.

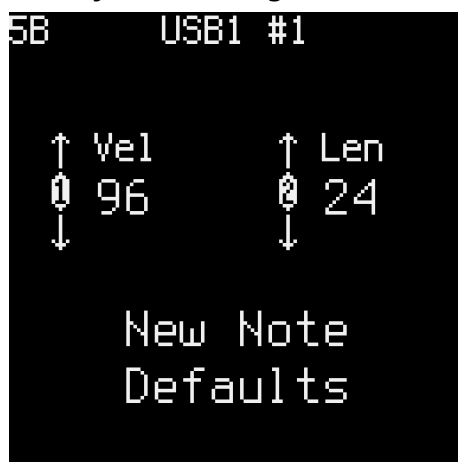
**Note:** MatriX will remember the active area of each track. This allows for quick changes when tracks are switched, e.g., a note detail on a drum track and a synth chord on another track, even if the note ranges and/or time regions are completely different.

*Tip: push and hold the "B" key to show what notes map to rows 1-16:*



## 7.2.2 Note defaults

Creating a sequence of new notes with Matrix is very simple! The default length and velocity are set using sliders 1 and 2 as long as no note selection is active:



Note velocity is increased on a spectrum from red to violet, if this is the current display option. Increasing length will result in notes taking up more keys.

## 7.2.3 Create notes

- To create a new note, push any empty 16x16 key that is not currently occupied by an existing note head.
- Use the X and Y sliders to zoom in if required. This will allow the creation of notes "between" existing notes.
- Multiple notes present on the same key are rendered in white, which can be further discerned if the view is zoomed in.

## 7.2.4 Delete notes

Tap any note head to delete the underlying note.

## 7.2.5 Select and modify notes

- Push and hold any number of existing notes to define a selection.
- Add more notes to the selection by pushing note-head keys. Remove notes from the selection in the same way.

The OLED displays the combined properties of the selected notes:

```
5B      USB1 #1
      3 notes selected

↑ Vel      ↑ Len
0 64 -    0 18 -
↓ 70      ↓ 44

↑ Pos      ↑ Note
0 18 -    0 A-2 -
↓ 23.91   ↓ F-3

⓪ Revert  +Joy  Commit ⓪
```

Use the joystick to modify the selected notes:

- Slider 1: velocity
- Slider 2: length
- Slider 3: absolute position x
- Slider 4: absolute position y

After modification, push "ok" to commit the changes or "back" to revert all selected and modified notes to their previous states at the time of selection.

To deselect all notes, commit or revert the selection, or create a new note.

**Tip:** when moving a note selection vertically "offscreen" with either the joystick or slider 4, use the B button to configure "AutoY mode", which will resize the visible area to keep the notes visible.

## 7.2.6 Grid settings (A and B buttons)

The lower area of the OLED defines the current grid settings and counts the current clip position upwards. Press the A and B buttons to cycle through grid settings for each axis.



**A** cycles through these types:

- FreeX: freely pan the active area horizontally with the joystick
- GridX: snap horizontally to zoom-level-based increments (i.e. full measures)
- FolwX: lock the time cursor (when the sequencer is running); notes are triggered as they “fly past” the cursor

**B** cycles through these modes:

- FreeY: freely pan the active area vertically with the joystick
- GridY: snap vertically to vertical zoom-level-based increments
- AutoY: auto-zoom vertically and center the active area around existing notes; the viewing area grows to accommodate the new range

Notes partially shown in white mean that they overlap with other notes. Always select notes at the head, i.e., the left-most part of the shown note (brighter color).

## 7.3 Scale mode

MatriX offers more than 160 scales that may be rooted in any key (i.e., the twelve standard notes of the Western scale). Scales are set globally for each LoopA session, which is active for all clips that have force-to-scale (FTS; see LoopA LiveFX screen) activated.

*Enter Scale mode with shift + extra column key 15.*

### 7.3.1 Scale selection

Press any 16x16 key to select a scale. Alternatively use the joystick to scroll through the list or use slider 1 to set the absolute position.

Once selected, the associated 16x16 key flashes and the OLED displays the scale name, scale number, the unique number of notes per scale and (based on the selected root note) all the notes that belong to it:





In the picture above, the "Nine Tone Scale" (scale 71) with root note A and nine notes per octave is selected. The mini keyboard shows available notes A, B, C, C#, D#, E, F, F# and G#.

### 7.3.2 Scale grouping

The scales are grouped as follows, starting with the upper-left key region:

- Major
- Minor and variations
- Pentatonic and variations
- Octatonic
- Modes
- Various scales in alphabetical order
- Indian Melakarta
- Space for additional scales (open for suggestions!)

*Note that overlaps between groups occur e.g., Major scale, Ionian mode and Bilaval theta (or thaat) all use the same notes.*

### 7.3.3 Select root note

The root (or tonic) note of a scale is selected with slider X. The OLED updates to display the root note name and corresponding notes present in this scale.

### 7.3.4 Using selected scale with LoopA and other MatriX modes

The active scale is global for a LoopA session with the following caveat:

The selected scale mapping **only takes effect if force-to-scale is active** on the current LoopA clip. This allows for otherwise fixed-note assignments, e.g., for a drum track or when chromatic tuning is useful.

**Tip:** Toggle force-to-scale (FTS) from the LoopA LiveFX screen or on MatriX using shift + extra row key K (also from the Macro screen).

With FTS active, keys will be remapped for MatriX Notes and Keys modes.

### 7.3.5 Color mapping for notes

Each note of the scale takes on a different color according to the following spectrum:

Note name	Color
C	Red
C# (D b)	Orange
D	Yellow
D# (E b)	Chartreuse green
E	Green
F	Teal
F# (G b)	Cyan
G	Sky blue
G# (A b)	Blue
A	Indigo
A# (B b)	Violet
B	Fuschia

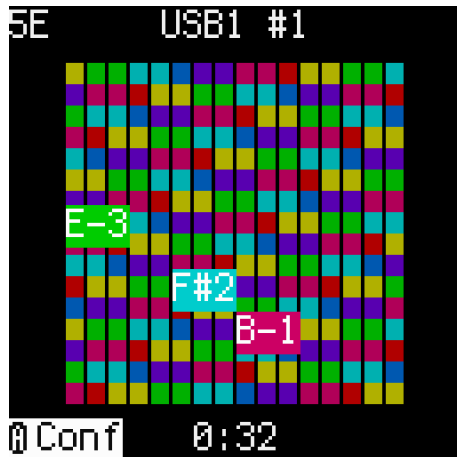
## 7.4 Keys mode

This mode transforms the 16x16 (256 in total) central keys into an isomorphic keyboard. The layout of notes is similar to a string instrument: in other words the columns go up in semitones (like frets on a guitar or bass) and the rows are by default “tuned” in fourths.

*Enter Keys mode with shift + extra column key 13.*

### 7.4.1 Note layout and naming

The default keyboard view starts with an “open B string” as the lower-left corner. Directly above the B is an E note. Play any note to see the corresponding note name on the OLED.



The picture above shows Keys mode with force-to-scale activated (G Major scale) and the left hand playing a chord. The isomorphic layout enables chords to be played over multiple octaves that could not be easily spanned on a classic piano keyboard.

#### 7.4.2 Configuration of Keys mode and slider assignment



- Press the A button to enter a configuration page for Keys mode
- Commit changes with the “ok” button or reset changes with the “back” button

Once in the configuration page, the following parameters may be adjusted:

- Slider 1 sets the output velocity
- Sliders 2, 3 and 4 set their CC (continuous controller data) number
- Buttons A and B cycle through (or disable) pitchbend and modwheel axes
- Sliders X and Y set up the semitone scaling of the 16x16 keys
  - Default X scaling is 1 semitone (like frets on a guitar)
  - Default Y scaling is 5 semitones (like strings on a guitar)

In the normal Keys mode:

- Slider 1 sets the output velocity
- Sliders 2, 3 and 4 send out CC data

- The joystick sends pitchbend and/or modwheel data (if configured)
- Slider X shifts the keyboard in semitone steps

### 7.4.3 Color mapping for notes

See section 7.3.5 for this info.

### 7.4.4 Interaction with Scale mode

If a scale was selected and force-to-scale is activated for the current clip, the 16x16 matrix will rearrange to reflect the new note arrangement. Only notes that belong to the selected scale are displayed.

### 7.4.5 Recording and forwarding notes

If the active LoopA track is armed, playing notes within Keys mode records into the track. All LoopA recording types are available (see the LoopA manual for details).

Notes are sent out of the configured port (or instrument) if forwarding (Fwd) is on, and notes are only recorded into a track if it is armed. Thus it is possible to play a freeform passage over the top of looping tracks by disarming the track.

**Tip:** Use MatriX as a central controller for any synths that are configured on LoopA channel ports.

## 8. midiphy SEQ v4+ support

MatriX extends the SEQ v4+ with its massive button LED matrix (BLM), enabling rapid and multi-touch entry of notes and more. The control surface can be remapped to different display modes, enhancing and simplifying several SEQ workflows.

Communication between the SEQ v4+ and MatriX is bidirectional. Any notes entered or changed on MatriX appear on the SEQ track and vice versa.

### 8.1 Color system

MatriX uses two primary SEQ colors plus a third as a combination of these hues. Colors may be configured as a setup option (see section 6.2). Per default, these are red and green, which combine to make yellow.

### 8.2 Cursor

If the sequencer is running, a cursor steps across the 16x16 key area. Programmed notes will play when the cursor reaches that step.

### 8.3 Extra row

The extra row is mainly used to display the active step view and to navigate to other regions of the track. The width of the view is always sixteen steps and the number of separate views depends on the maximum step length of the track. This follows the same convention as used on the SEQ v4+ second row (maximum steps are configured in the SEQ v4+ Menu > Events). Thus a 256-step track will have sixteen separate views and a 64-step track will have four separate views (i.e., the maximum number of steps divided by sixteen). Press a key along the extra row to jump to that edit view.

Extra row keys indicate the currently playing region (color 1; default red) and active edit view on MatriX (color 2; default green). A combination color means that steps are playing in the active edit view (default yellow).

### 8.4 Extra column and shift functions/modes

The extra column normally selects the track, starting with track 1 on extra column key 1.

With the shift button held, the extra column alters the extra column behavior or changes MatriX modes:

Extra column key	Shift function
1	Start sequencer
2	Stop sequencer
3	Toggle mutes
4	Toggle solos
5	(currently no function)
6	(currently no function)
7	(currently no function)
8	(currently no function)
9	(currently no function)
10	(currently no function)
11	303 mode
12	Keyboard mode

13	Patterns mode
14	16-Tracks mode
15	Single-track mode
16	Alt key

Details of shift functions and modes follow below.

#### 8.4.1 Start

This combination starts the sequencer.

#### 8.4.2 Stop

This combination stops the sequencer.

#### 8.4.3 Mutes

This function toggles the behavior of the extra column to mute the selected track. Use the same shift-key combination to revert to the default track selection.

Overrides Solos toggle if it was active. Muted tracks are indicated with the second color (default: green). The active track can still be selected on the SEQ v4+.

#### 8.4.4 Solos

This function toggles the behavior of the extra column to solo the selected track, Use the same shift-key combination to revert to the default track selection.

Overrides Mutes toggle if it was active. Soloed tracks are indicated with the third color (default: yellow). The active track can still be selected on the SEQ v4+.

Muted tracks that are also soloed are indicated with the first color (default: red).

#### 8.4.5 303 mode

This mode applies to monophonic Note tracks.

The lower twelve key rows (i.e. rows 5-16) are mapped to notes, starting with C on row 16. Press a key to enter a note trigger at that step.

The upper four rows control 303-like functions for a column:

- Row 1: accent (sets velocity to 127)

- Row 2: glide
- Row 3: transpose up two octaves
- Row 4: transpose up one octave

**Tip:** shift 0/1/2/3 octaves by combining the transpose keys.

### 8.4.6 Keyboard mode

Columns of the 16x16 keys play notes. Velocity is mapped to the y-axis, with minimum velocity on row 1.

The keyboard contains notes belonging to the current scale. The first column starts with a C2 note, otherwise the next note in the scale (e.g., C# or D). Transpose semitones or octaves on the respective SEQ v4+ menu page.

### 8.4.7 Patterns mode

The 16x16 keys are divided into four blocks of four rows. Each key within the block of 64 represents a pattern in each of the four pattern groups. Press a key to jump to that pattern.

Hold down the alt key (access with shift + extra column key 16) and press a pattern region to store the pattern info.

### 8.4.8 16-Tracks mode

The 16x16 keys display all 16 tracks simultaneously, i.e., one track per row. Note triggers may be added or removed for any track within the selected step view. Editing notes or pressing an extra column key switches to that track and updates the step-view range (if different from the previous track).

If the track length, divider, direction or progression settings are set up differently, any such track will run out of sync with other tracks. This intended behavior is mirrored in the SEQ v4+ activity matrix.

If a step contains a chord comprised of several notes (using multiple note layers), removing this step in 16-Tracks mode “untriggers” all notes at that step. If the step trigger is reinstated, other notes of the chord will also reappear. The same technique can be realized using the top row of SEQ v4+ keys for the active track.

### 8.4.9 Single-track mode

All note triggers of a single track are displayed, including where multiple notes of a chord are played on one step (for tracks with more than one note layer). Note pitch increases vertically up the rows. Unlike for the MatriX-enhanced LoopA, the SEQ v4+ note view is fixed into either sixteen semitones of an octave or sixteen notes of a scale (if enabled).

Transpose the track as required or edit notes on the SEQ v4+ parameter layers if they span a wide range.

**Tip:** SEQ v4+ option 29 changes the force-to-scale behavior of this mode.

Changing the SEQ v4+ layer view with the second key row will update MatriX single-track mode with the current layer view. Non-note parameter layer data are displayed as a proportional bar graph, increasing in value from bottom to top.

## 8.5 CC data

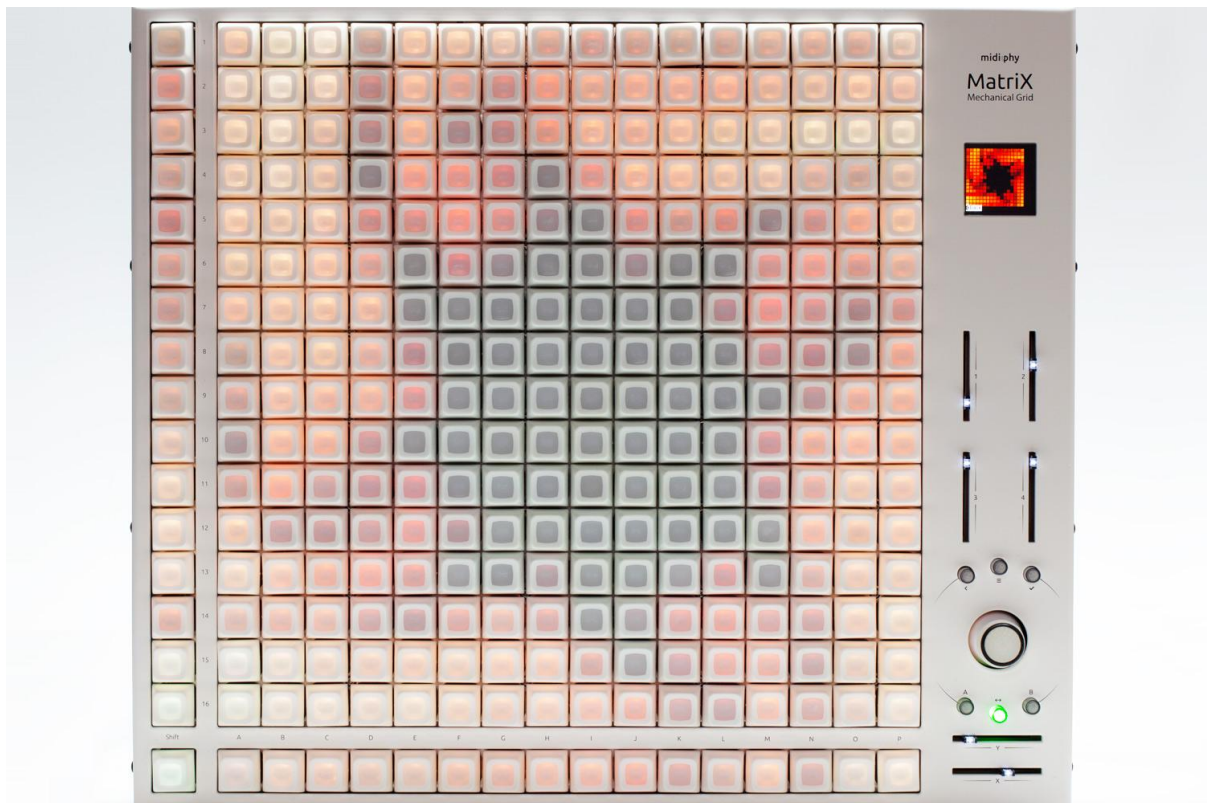
The MatriX sliders and joystick send CC data on the configured port(s); see SEQ v4+ option 30.

# 9. What's new/changelog

Find a list of recent changes below

### V1.00 (released on 2021-11-11)

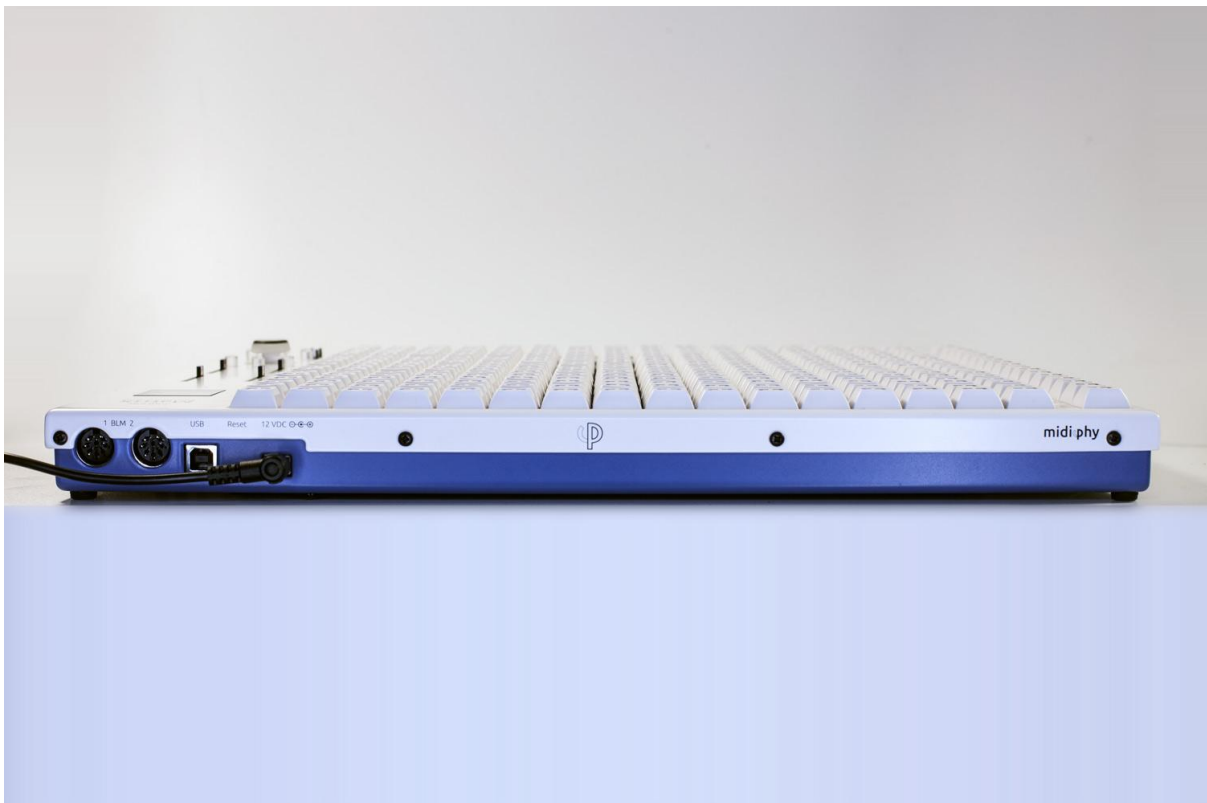
- Initial MatriX release Version





## 10. Contributions and acknowledgements

- Peter: software adaptation and implementation, build testing, user manual
- Andy: hardware concept, PCB and keycap design, function testing, user manual
- Thorsten Klose: software framework (MIDIbox)
- Adrian Hallik: enclosure design and production
- **All current and future builders and users of MatriX: you made and continue to make this device possible and ensure continuous development. Thanks!**



## 11. Specifications

Size	41 x 35 x 4 cm <sup>3</sup>
Weight	3.4 kg
Recommended power supply	12VDC/60W, 2.5 mm center-positive barrel
microSD card	SDHC, e.g. 8 GiB, Class 10