SPATIALIZER SLX

User Manual

Congratulations!

You have purchased the first all-in-one Sound and Light Spatializer, a small wonder of technology that fits in your hands!

Our device was inspired by Pierre Schaeffer, who was experimenting with spatial sound in the 1950s with his 'space potentiometer'.

We took this same concept to the 21st Century, and the result is our digital spatializer with 20 inputs and 8 outputs + DMX output for light control.

Be creative and have fun!

The Sonalux Team

Product Specifications

Model: Spatializer SLX-2.0

Power: 5V via USB-C port

Dimensions: 15.8cm(W)x13.7cm(L)x22.15cm(H)

Number of Outputs: 8x

Number of Inputs: 20x total. 2x Unbalanced 3.5mm socket (Line Stereo) + 2x Balanced mono 6.35mm sockets + 8x USB interface out + 8x microSD card files

Latency: 10ms

Input Impedance: 3.5mm: 2.7kΩ (unbalanced)
6.35mm: 20kΩ (balanced)

Output Impedance: 470Ω (balanced)

USB Interface: 2.0 Specification; 2x Inputs and 8x Outputs

Number of microSD Card Files/Channels: 8

SD Card Type and Format: microSD FAT32

Audio File Type (microSD Card): Files must be named `001.RAW` to `008.RAW` and set to Mono PCM, 44.1 kHz 16-bit signed

DMX output for controlling lights via Ethernet port

SLX output for connectivity with Sonalux devices

Operation

Note: The outputs must be connected to amplifiers or active speakers (e.g., PA systems or studio monitors) via balanced cables.

1. Input Select

• Use the toggle switch to select between USB Interface, SD card and Line In. This will set the input LEDs that will be selected on the matrix.

2. Matrix

• The LED matrix shows inputs and outputs through LEDs, and this allows you to route your inputs to different speakers.

• Use the joystick to move right/left/up/down and press the 'select' button to activate the desired connection. Quick patterns can also be obtained from a list of presets (see #4).

3. Live Mode

Live mode allows you to control the movement of the input of your choice and position it precisely in the spatial configuration of the speakers. This uses VBAP technology.

- Hold the select button and move the joystick for **'live mode'**. In this case, the matrix shows the spatial position of the input sound in a 360 degrees layout, where speaker #1 is in front of you. The number of speakers/outputs can be changed (see #5).
- Live mode can also be recorded by following these steps:

- activate live mode on selected track.
- press tap/volume button, the square on the matrix should change to red.
- record the sequence as wanted.
- release select button.
- the sequence recorded will now play in loop.
- to disable just press select on the row.
- note that only one track can be recorded at once, and also cannot be started if the sequencer is active.

4. Play/Stop and Pattern Selection

- Press this button to play or stop SD card files. Files must be named `001.RAW` to `008.RAW`, set to MONO PCM, 44.1kHz Signed 16 BIT and stored in the root folder. Do not remove the SD card while playing from it.
- Holding this same button will change through different pre-programmed matrix presets. These patterns can be re-programmed by inserting a microSD card carrying a `config.ini` file (see #7).

5. Sequencer

- Use the joystick to select the input line to be sequenced, then press the sequencer button. Multiple lines of sequencers are possible.
- Hold the sequencer button to select all lines at once.
- To change the direction, simply slide the joystick left or right.
- As default, the sequencer is pre-programmed to go through 8 outputs. If a different number of outputs is

used (e.g., 4 or 6), the number of sequencer outputs can be re-programmed. This can be done by selecting the maximum number of speakers on the matrix, then holding the select button and pressing the play button at the same time. Repeat this action to undo (defaults back to 8 speakers). Another way to define the maximum number of speakers is to insert a microSD card carrying a `config.ini` file (see #7).

- The sequencer tempo can be changed by using the 'tap tempo' button (see #6).
- The panning law set for the sequencer (as well as for live mode) is a constant power law, which means panning is created with more stable loudness (the transition from one speaker to another speaker sounds more natural).
- You can activate the sequencer to start automatically on startup via the microSD card (see #7).

6. Tap Tempo / BPM / Input Volume

- Tap the 'tap tempo' button on the tempo you would like to be selected for the sequencer mode.
- Long press this button for accessing the input volume, which will show up on the matrix. The button will also light up. Use the joystick to adjust the volume. To exit this mode, just long press the button again.
- To adjust the BPM without tapping the button: while the sequencer is on, hold the tap tempo button and use the joystick. You should see on the matrix a dot for each 10bpm starting at 30bpm. For example 8 dots mean 100bpm. Max is 600bpm.
- The initial BPM can be configured by inserting a microSD card carrying a config.ini file (see #7).

7. Config File

- More advanced settings can be selected through a config file saved in a microSD card. You can download an example from our website, or you can make your own by creating a `config.ini` file or edit the one provided with the SD card. The file must be encoded to UTF-8. The content of the file should look like this:

```
[general]
nbspeakers = 6
```

This will change the default number of outputs to 6. More commands can be added. Below is an example file with all possible commands. Comments are shown as # (if needed, remove this hash to activate a function).

```
[general]
# Number of speakers to use from 3 to 8
nbspeakers = 8
# Number of milliseconds for the sequencer
between each step
sequencerSpeedMs = 1000
# Set last speaker as a static track that
doesn't change with sequencer, e.g track 8 if
8 speakers (0 disabled / 1 enabled)
staticTrack = 0
```

```
# Turn off automatic looping (0/1)
loopingOff = 1

[input]
# volume of each file input gain, up to 8
comma separated - values from 0 (min) to 8
(max)
volumeFiles = 8,8,8,8,8,8,8,8
# volume of each usb input
volumeUsb  = 8,8,8,8,8,8,8,8
# volume of each line in input gain, up to 4
comma separated - values from 0 (min) to 8
(max)
volumeLineIn = 8,8,8,8

# Patterns up to 10, can set outputs for each
file / line in, comma separated list of
speakers to send to from 1 to 8. This
overwrites the default patterns.
#[pattern1]
#file1Outputs = 1,3,5
#file2Outputs = 2,4,6
#file5Outputs = 7,8
#lineIn1Outputs = 7,8
#lineIn2Outputs = 4,5,6
#lineIn3Outputs = 1,2,3

#[pattern2]
#file1Outputs = 2,3,4
#file2Outputs = 5,6,7
#file8Outputs = 8
#lineIn1Outputs = 1,3,5
#lineIn3Outputs = 2,4,6

#Activate Sequencer on startup, R for right
direction and L for left direction
[sequencer]
```

```
seq1 = R
seq3 = L

#Song Mode: A song has up to 8 outputs with 8
tracks each, and for each track the positions
in Ms where it goes on or off.

[songTrack1]
output1 = 0,5000,10000
output2 = 0,5000,10000
output7 = 5000,10000
output8 = 5000,10000

[songTrack2]
output4 = 0,4000
output5 = 0,4000

[dmx]
# Number of DMX channels per light unit
nbDmxChannels = 3
# RGB Channel offset (start of RGB)
dmxOffset = 0
# DMX reactive mode: only activates output
when sound detected (0/1)
dmxReactiveMode = 1
# If some channels need specific values (max
of 8 channels supported)
dmxChannelVal1 = 0
#…
dmxChannelVal8 = 255
```

```
# DMX output colours can be adjusted. The
available colours are:

WHITE,GOLD,ORANGE,RED,PINK,BLUE,TURQUOISE,GREE
N,AQUA,OLIVE,CERISE,LIME,BROWN,LAVENDER,PURPLE
,SALMON
color1 = PINK
#…
color8 = GOLD
```

- You can use our software to generate pre-programmed sequences that can accompany audio files from a microSD card (Song mode). The sequences are saved as data in the `config.ini` file. Please see our website for more information.

8. Recording

The USB interface can also be used for recording, but it only supports stereo currently.

9. USB-MIDI

The **Spatializer SLX** can be controlled via USB-MIDI.

SEND MIDI TO THE SPATIALIZER SLX

• MIDI Notes
Note latch mode: **C#3**
Select USB matrix: **D#3**
Select SD matrix: **F#3**
Select Line matrix: **G#3**
Matrix inputs: **C3, D3, E3, F3, G3, A3, Bb3, B3**
Matrix outputs: **C4, D4, E4, F4, G4, A4, B4, C5**

• Control Change (CC)
CC12: DMX External/Global Channel Select (1-127)
CC13: DMX External/Global Channel Value (0-127)
CC16: DMX Internal Unit Select (1-8)
CC17: DMX Internal Unit Red (0-127)
CC18: DMX Internal Unit Green (0-127)
CC19: DMX Internal Unit Blue (0-127)
CC32: DMX Number of Channels per Unit
CC33: DMX Channel Offset (start of RGB)
CC34: DMX Reactive Mode (0/1)
CC35: DMX I/O Mode (0: none; 1: Input; 2: Output)
CC24: deactivates latch mode
CC25: volume USB (val 1 to 8 for output, MIDI channel 1 to 8 for input)

CC26: volume SD (same as above)
CC27: volume LINE (same as above)
CC28: live data toggle to enable MIDI transmission (0/1)
CC29: change number of speakers (2-8)
CC30: joystick computer control: in this mode the joystick no longer controls the matrix but can be used by the computer as it sends the joystick values (0/1)
CC31: play/stop SD card (0/1)
CC64: sustain pedal activates note latch mode

RECEIVE MIDI FROM THE SPATIALIZER SLX

Note: For this mode to work, the live data toggle must be active. This is turned off by default to prevent impact on performance. You can activate it by sending 1 to CC28 or by pressing **SELECT + SEQUENCER**.

• Control Change (CC)
CC1: joystick X
CC7: master volume
CC10: joystick Y
CC14: play/stop (0/1)
CC15: receive the current number of max speaker set on the device
CC16: tap tempo press
CC17: note latch status after C#3 is pressed (0/1)
CC18: current volume set for USB
CC19: current volume set for SD card
CC20: current volume set for LINE
CC21: joystick selected position
(1 = U, 2 = D, 3 = R, 4 = L, 5 = UR, 6 = DR, 7 = UL, 8 = DL)

10. JOYSTICK MODE AND CALIBRATION

The joystick mode allows you to calibrate the joystick or to use it as a MIDI controller (e.g., for controlling faders or live automations in DAWs). To enter this mode, hold select and press tap tempo.

When the Input Select toggle is on USB (top), it provides the joystick data in the X-axis only. The SD card (middle) toggle position provides the X-axis and Y-axis altogether, and the Line in (bottom) position provides the Y-axis only. The Live Data toggle must be active to output MIDI (see the note above on #9, Receive MIDI from the Spatializer SLX).

For calibration, set the joystick to its maximum position to the right and press Sequencer. The lights will flash. Repeat for left, up and down positions. Once calibrated, restart the device.

11. AUDIO LEVELS

Outputs have been adjusted for line level at 2V at maximum volume, this can be adjusted via the volume mode (see #6).

The 3.5mm (1/8 inch) input (IN1/IN2) is an unbalanced stereo input with direct routing. The 6.35mm (1/4 inch) inputs (IN3/IN4) can be used for balanced mixer connections (e.g., DJ mixers XLR or booth output) or for instruments (e.g., guitar/microphone) but because of the balanced input and impedance they **must** be plugged in via a DI box (active preferred) depending on the signal source (this is not included and must be purchased separately).

12. DMX LIGHT CONTROL

DMX lighting can be controlled directly from the Spatializer. To do this, use an Ethernet-to-DMX adapter cable (Pin 1 = DMX+, Pin 2 = DMX–).

The DMX mode can be changed by **pressing the joystick button**. A set of default colours is attributed to each input/output, but this can be adjusted via the config file (see #7), as well as the reactive mode, and the number of DMX channels per light. More settings are available via MIDI (see #9).

DMX Mode 0: DMX is not active. The matrix will only show blue (USB), green (SD card) and purple (line in).

DMX Mode 1: Colour based on input tracks: the first time the button is pressed, each input is attributed a fixed colour. In this mode the output colour is the average colour of each selected input.

DMX Mode 2: Fixed colour per speaker/light: when the button is pressed again, each output is attributed the same fixed colour. To disable DMX, press the button again.

Software

We provide in our website free software to be used with the Spatializer SLX.

Spatializer SLX Control Room is a USB-MIDI software that allows you to take control of the interface from your computer. It features more options for the sequencer (various sequencing speeds) and a multichannel file player.

Spatializer SLX Spatial Sequence Generator is a user-friendly interface for creating spatial cues alongside song tracks. It supports up to 8 tracks. The data is saved in a text file to be used in a microSD card.

Please see our website to download the software:
www.sonalux.co.uk/spatializerSLX

Troubleshooting

1. **No sound comes out.**

Make sure the speakers are not passive. The outputs need to connect to speakers through an amplifier or active speakers (e.g., PA systems or studio monitors). Cables must be balanced. Also, be sure that you have selected the correct input/output in the matrix. Sometimes it may happen that the interface has not initialised correctly. In this case, restart the device.

2. **Audio file from the microSD Card is not playing.**

If there are no files to play, the matrix should show an exclamation mark when pressing the play button. Make sure you are using the following settings: Audio files must be named `001.RAW` to `008.RAW` and set to MONO PCM, 44.1kHz 16-BIT SIGNED. Files must be in the root folder. If you use Audacity to convert the files, make sure the project rate is set to 44.1kHz, as Audacity's default is 48kHz.

3. **There is a high pitch noise in the outputs.**

This could be a ground loop noise conflicting with the LED matrix. This may happen if you power the device through the USB port of a computer and connect audio from this same computer's line out socket. Please use the USB interface to avoid this issue or purchase a USB isolator that supports high speed (480mbps). Also, make sure the outputs are balanced.

4. Audio glitches when playing from the microSD card.

Make sure the card is formatted to FAT32 with memory blocks of 64KB. To avoid audio glitches or dropouts, we recommend using a high-quality microSD card with:

- UHS-I bus and rated Class 10 / U1 / U3 / V30.
- Internally using 3D NAND for improved endurance and access speed.

Spatializer SLX Quick User Guide

SD Card
Press *Play/Stop*.

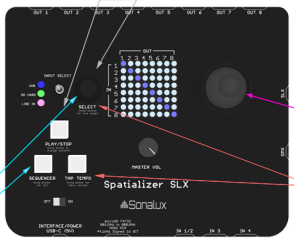
Change Patterns
Long press *Play/Stop*.

Sequencer
Press *Sequencer* to start it.
Long press to select all inputs.
Tap *Tap Tempo* to change the BPM or hold *Tap Tempo* (while active) and move the joystick.

MIDI Output
To activate MIDI output, press *Select* + *Sequencer*. This prevents the device from automatically sending MIDI when it's not necessary.

Input Volume
Long Press *Tap Tempo*.

Set Max Number of Speakers
Select max number via matrix/joystick, then hold *Select* + *Play/Stop*.



Live Mode
Hold the *Select* button while moving the joystick.

To record, while holding *Select* press *Tap Tempo*.
The square turns red. Release *Select* and the sequence will play in a loop.

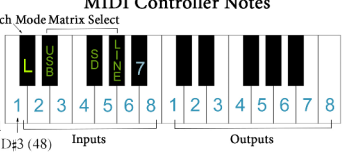
DMX Modes
Press the joystick button.
0: not active; 1: input colors;
2: output colors

Joystick Mode
Press *Select* + *Tap Tempo* to use MIDI joystick (MIDI out must be active). Change the Input toggle for choosing the joystick axis (X, X + Y, Y).

In this mode, you can also calibrate the joystick by moving it to the right and pressing *Sequencer*. Repeat for left, up and down.

Check the full manual for more information on MIDI, config file and other settings.

MIDI Controller Notes



Web Control

Sustain Pedal (CC64)

Thank you for being part of our spatial sound universe!

With the Spatializer SLX, you're not just using a device — you're joining a creative movement that redefines how sound and light interact. Inspired by pioneers of the past and built for the innovators of today, this is your tool for exploration, expression, and immersive storytelling.

We can't wait to hear what you will create.

— *The Sonalux Team*

Sonalux

CE RoHS

Made in Liverpool, UK