Spacelite

User Manual (EN)

v1.1.0

digital audio manufacture.

Index

Introduction

Spacelite is the first commercial product of the Digital Audio Manufacture.

Il enables upmixing of up to 4 stereo inputs to 4 Buses, each with 16 outputs and sub management capabilities. Additionally, audio can be streamed through a direct-to-master bus to bypass processing.

For each Bus, you can specify the number of outputs (maximum 16) and configure low frequency management. This versatile tool serves both post-production and live environments:

- In post production, Spacelite facilitates upmixing stereo stems for 3D audio encoding, such as Dolby Atmos or Sony 360 Reality Audio.
- For live applications, it manages stereo stems across multiple speakers, creating multiple diffusion spaces, ideal for theater productions, live music performances or DJ sets.

1.Installation

1.1 macOS

On macOS, please open the .dmg file containing the Spacelite Application and move it your Application folder. On first launch, a DigitalAudioManufacture folder should be created in your Documents folder, as well as a Spacelite folder containing basic presets and configurations files.

1.2 Windows

On Windows, open the zip file containing the application folder, and move it to your default application folder (for exemple, « C:\Program Files\ »). On first launch, a DigitalAudioManufacture folder should be created in your Documents folder, as well as a Spacelite folder containing basic presets and configurations files. If not, please move the « DigitalAudioManufacture » file on your Documents file before launching Spacelite.

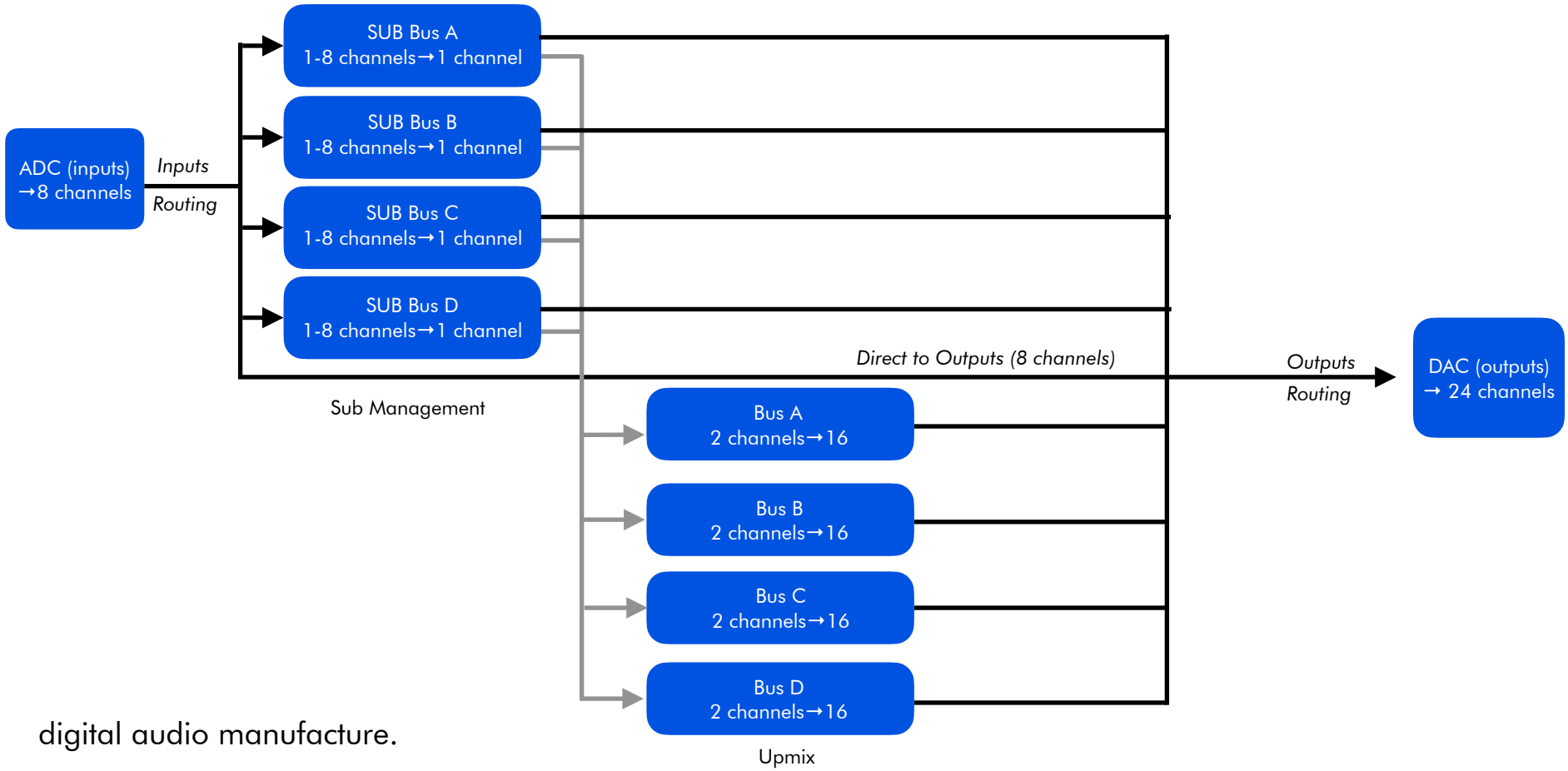
2.Processing

2.1 Audio Routing

Spacelite is built around two core functionalities: a Sub section that manages multiple inputs into a single low-pass filtered output, and an Upmix section that expands stereo signals to up to 16 outputs while preserving the original timbre and energy.

The application's signal routing is structured as follows:

2.1.1 Spacelite signal flow



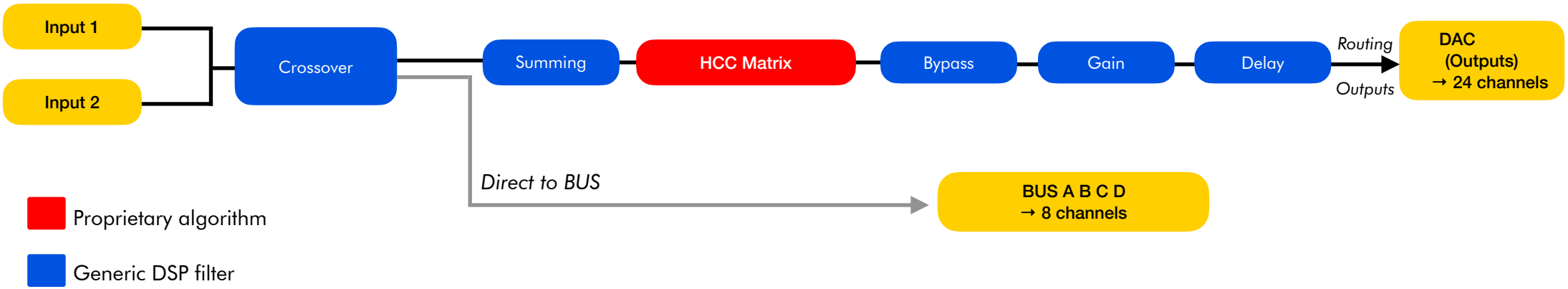
Audio first flows through each bus connection into the sub section. Based on the selected sub management mode, signal processing follows one of three paths: Upmix section only (Full + No Sub), parallel processing through both a high-pass filtered Upmix section and the Sub output (Reduced + Sub), or simultaneous processing through both the full-band Upmix section and a low-pass filtered Sub output (Full + Sub).

Spacelite is built upon two proprietary core algorithms: HSR (High Space Resolution) for upmix functionality and HCC (High Channel Concentrator) for subwoofer management. These foundational technologies are enhanced with additional DSP processing to optimize performance.

2.2 Subwoofer processing

The signal routing for the Sub section is structured as follows:

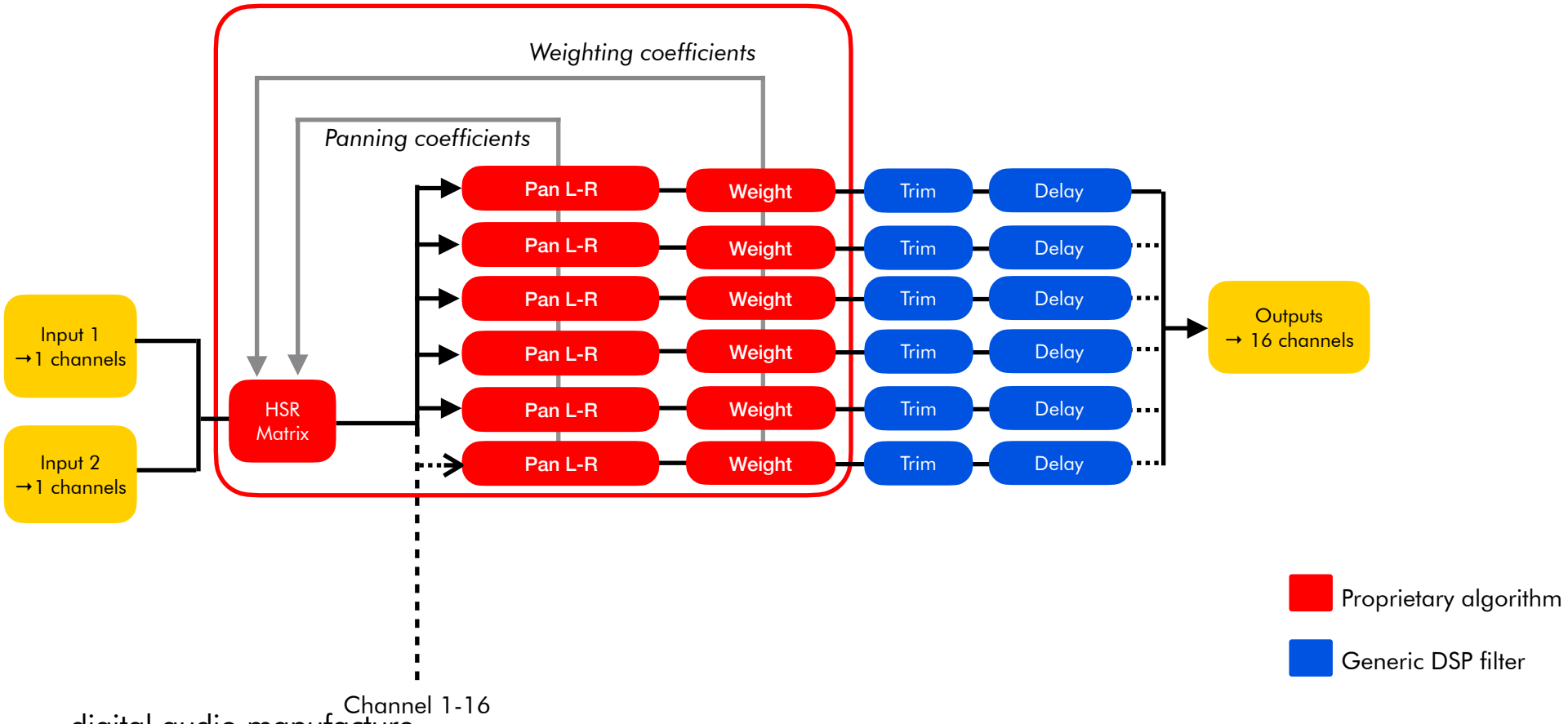
1.2.1 Sub signal flow



2.3 Upmixer processing

The upmix section distributes the stereo input across 16 outputs using pan and weight parameters for each channel. Adjusting these values determines the distribution characteristics for individual outputs. The system applies matrix coefficients that preserve the original stereo image and timbral balance of the source signal.
The signal is structured as follows :

1.3.1 Upmix signal flow



3.Interface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Spacelite 1.1.0
3
4
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Surround
In
Out
Surround
B
C
D
Name
Position
Weight
Trim
Delay
1
2
3
4
5
6
7
8
Left
Center
Right
Ls
Rs
-
-
-
100L
C
100R
150L
150R
C
C
C
0.0 dB
-6.0 dB
0.0 dB
-12 dB
-12 dB
-inf dB
-inf dB
-inf dB
0.00 ms
1-8
9-16
SUB
Surround
0.0 dB
M
B
0.0 dB
M
C
-6.0 dB
M
7
D
-24 dB
M
Direct to Master
0.0 dB
M
8
master
0.0 dB
M
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1 : Preset Management
2 : OSC indicators & MIDI management
3 : Audio Metering
4 : Parameter Menu
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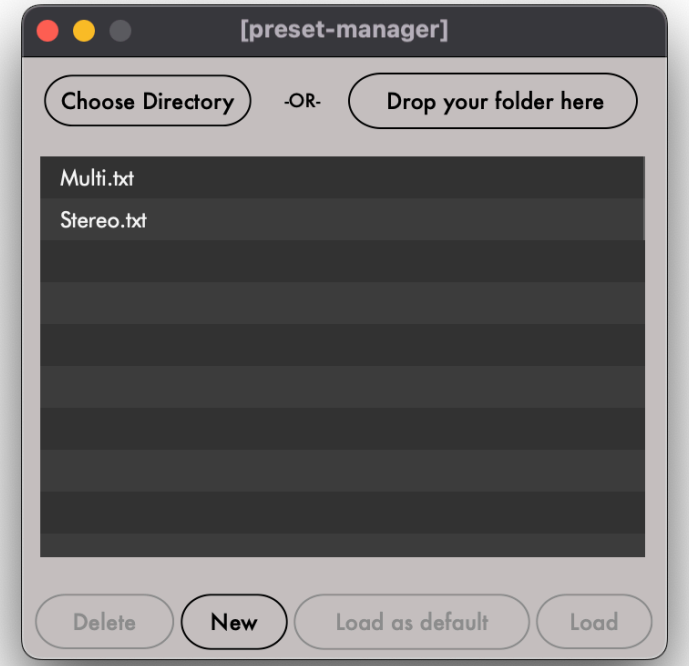
2.1- Preset Management ➔

The preset management section is displayed as followed :

The preset management section displays your current preset name 1. Clicking this name opens the preset management window (detailed below). Three additional icons allow you to: open a new preset 2 , save the current preset 3, and save the current preset as a new file 4. These provide quick preset management without requiring a separate window.

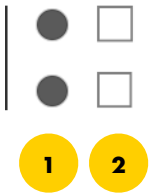
3.1.0 Preset Management Window

This panel allows you to define workplaces, view all presets within these workspaces, and create, delete or select presets. You can designate a default preset by selecting it and choosing "Load as default." Spacelite will launch with a copy of this preset upon startup.



3.2 : OSC indicators & MIDI management

The next section concerning the control connections to SpaceLight is represented as followed :



This control connection section features:
The OSC Input (top) and Output (bottom) connections to Spacelite 1 , configurable through the Configuration Menu. Adjacent is the MIDI mapping control (up) and mapping panel (bottom) 2 . The mapping control highlights parameters available for MIDI mapping in blue. To map a control, select the desired parameter and activate the corresponding control on your MIDI interface. You can customize mapping behavior in the mapping panel. Press ESC to exit mapping view.
The MIDI mapping panel displays all mapped controls and allows behavior customization for each MIDI control. You can import/export mappings to accommodate different MIDI configurations (also available in the Configuration Menu).

3.3 : Audio Metering

The next section is the audio metering :

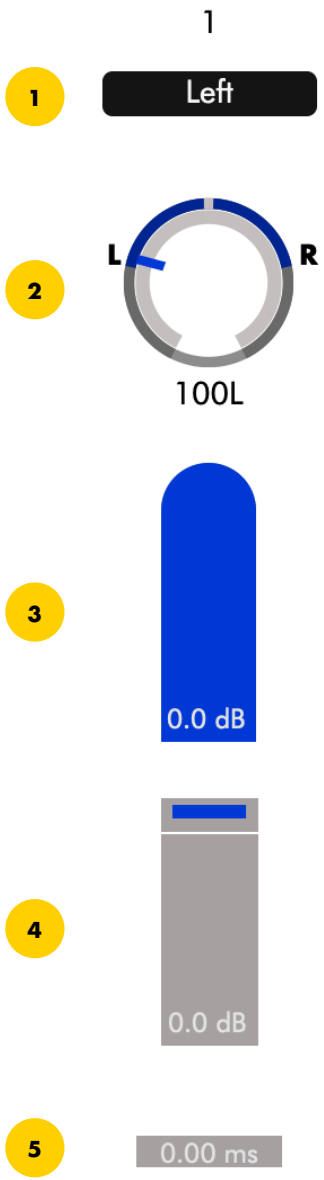
This section displays incoming and outgoing audio levels. Clicking expands the view to show detailed metering, including signal flow through each Bus and the direct-to-master section.

3.4 : Parameter Menu

This is the main menu you're gonna be working in. In this section you'll find all the parameters to control the audio in Spacelite.

On the top of the window, you'll find the Bus selection :

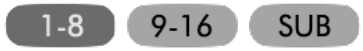
By default, the Buses are Named A,B,C and D. You can change those names in the Buses Master Control section. By clicking on the name of the Bus you'll be directed to the Buse's controls. For each bus you'll have the same controls :



For each output created from your stereo input, you can:

- Define a custom name 1 .
- Set the pan position within the L-R field 2 . For example, in an LRC configuration, you might position your LR outputs at their original positions or widen them (L→ -200, R → 200)
- Determine each output's weight, controlling where the original signal energy is distributed based on pan values and weight settings 3 .
- Apply trim adjustments to balance the signal 4 . Note that applying gain here breaks the iso-energy property but can usefully correct specific speaker outputs. A meter behind each trim-slider displays final volume before Bus Master Volume processing.
- Apply delay compensation to individual outputs, useful for speaker placement adjustments 5 .

Since all outputs cannot fit on one screen, use the navigation menu at the bottom to switch between outputs 1-8 and 9-16, or access the sub section:



1

As for the other ouputs, you can set a name for the sub output 1 .

2

Three modes are available for Sub management 2 :
- Reduced + Sub: Bus inputs are filtered with a high-pass filter at the Crossover Frequency
- Full No Sub: Sub management bypassed
- Full + Sub: : Filtered sub plays alongside unfiltered original inputs

3

You can set the Crossovr frequency for your sub management, to a frequency bewteen 20Hz and 120Hz 3 .

4

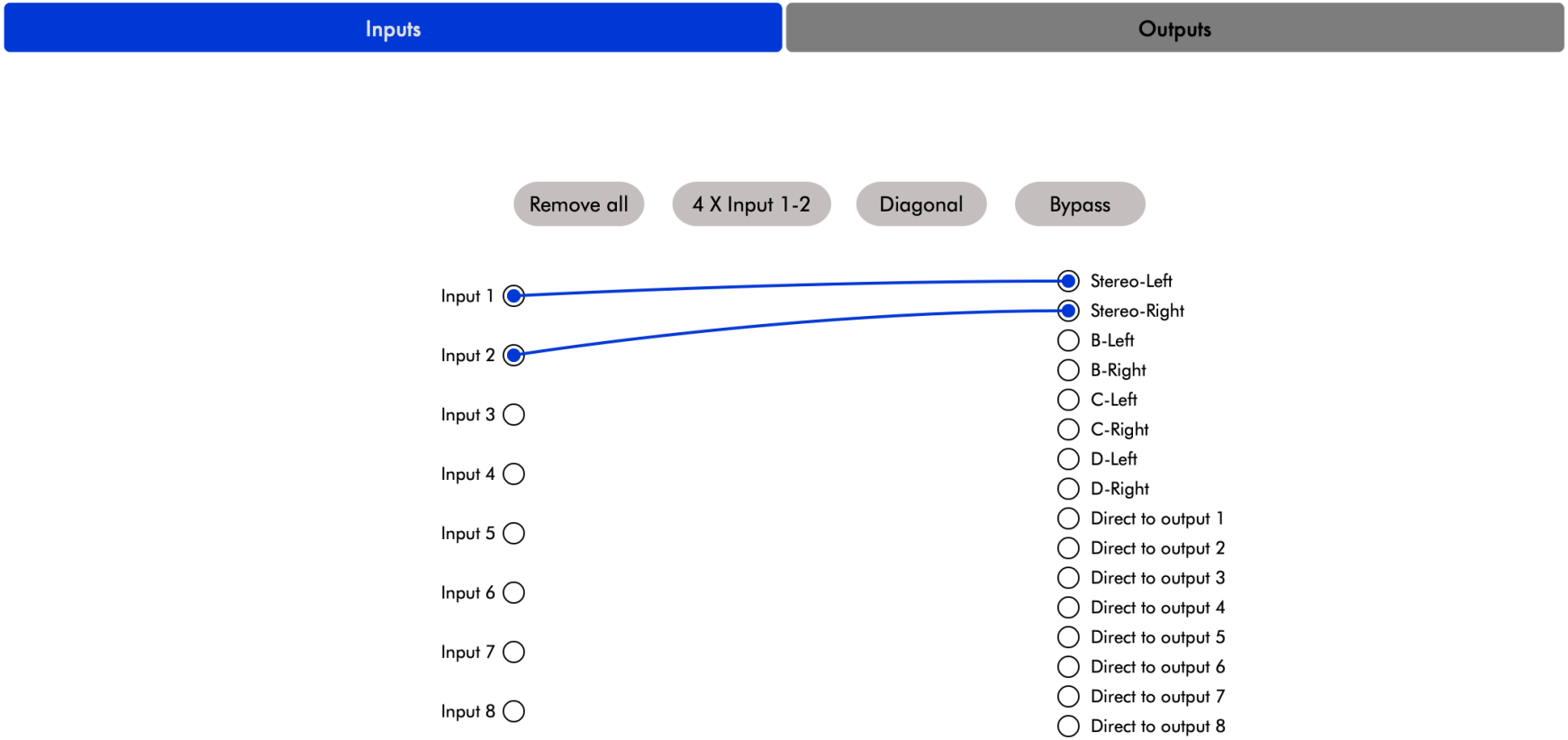
As for the ouptuts, the sub can be managed trough a gain control 4 . A meter behind the control allow you to see the sub volume before going to the Bus Master Volume.

5

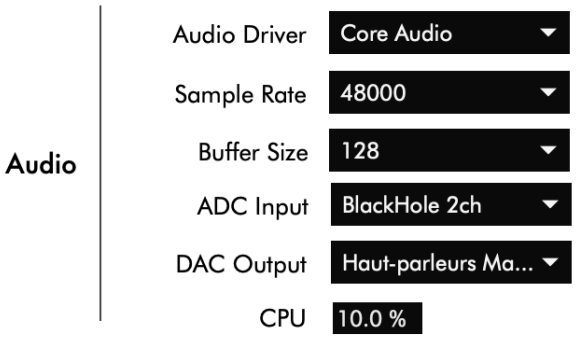
Finally concerning the sub parameters you can apply a delay to compensate for subwoofer placement 5 .

3.5 : Routing Menu

The Routing menu facilitates connections between application inputs and the various Buses, including the 8 Direct-to-Master Inputs. You can also route each Bus output to any of the 24 Application Outputs.
Multiple routing options are available - connect one input to multiple outputs or vice versa. To create multiple connections, hold "Shift" while patching. Delete connections by selecting and clicking Del key. Shortcuts buttons for Inputs and Outputs enhance workflow efficiency.

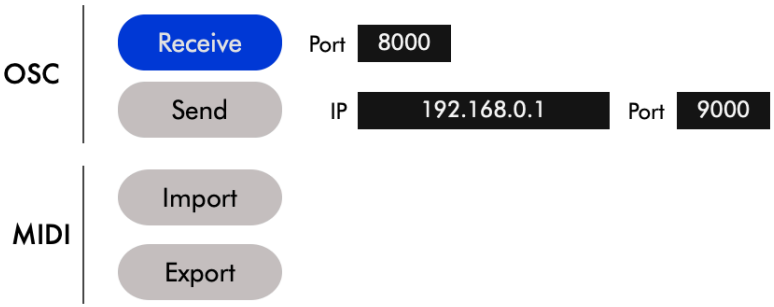


3.6 : Configuration Menu



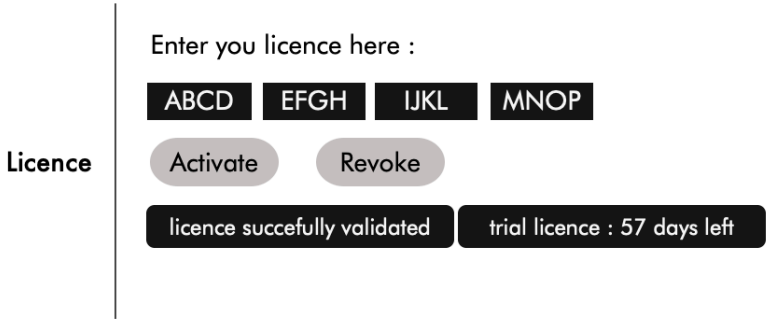
This menu contains application-wide settings organized into sections:

• Audio section: Configure your sound card settings, like your audio input and output, Sample rate and Buffer size.

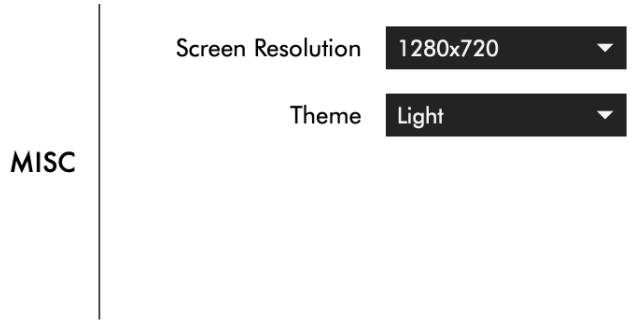


•OSC section: Enable OSC input messages and configure input port. Similar settings for output, including IP address and port designation

•MIDI section: Import MIDI presets and export configured presets to connect different MIDI configurations.



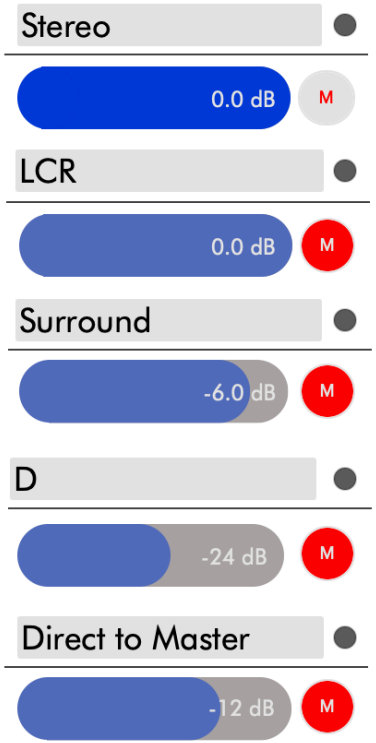
•License section: Critical for audio processing functionality. Without a license, no audio passes through the application, though it can still control another Spacelite instance via OSC. Visit www.dam-audio.com/Spacelite to purchase or request a trial license. Manage existing licenses, check trial duration, or transfer licenses between computers. If you licence doesn't activate, please wait a few seconds and retry to activate it.



•MISC section: Application environment settings, including screen resolution presets (additionally, resize by dragging corners or enter fullscreen) and theme selection (Light/Dark) for adjusting to different lighting conditions on your working environment.

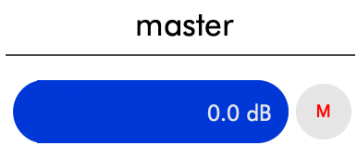
All configuration settings are stored independently from audio presets in a "global preset" folder. Import/export preferences or define startup configurations.

3.7 : Buses Master Controls



Located on the right side, these controls provide global management for each Bus and the Direct to Master section.
For each Bus, you can assign a custom name (except for Direct to Master), view audio activity indicators, adjust global gain, and mute/unmute.

3.8 : Master Controls



Found below the Buses Master Controls, these provide application-wide muting and overall gain adjustment.

4.OSC & MIDI Control

All parameters support control via MIDI and OSC protocols.

4.1 MIDI

To implement MIDI control:
- Connect your MIDI controller to the computer running Spacelite
- Click the MIDI mapping button to view available parameters
- Select a parameter and move your MIDI control to create the mapping
- Exit mapping mode (ESC key) and access the mapping panel to adjust control behavior, including scale and direction
- Export/import mappings to support multiple MIDI configurations

4.2 OSC

All parameters accept OSC control messages. Send commands to your computer's IP address and the configured OSC input port (set in Config Menu). If you want to know a parameter OSC adress, just put your mouse curor on a parameter and the OSC adress will appear on the bottom-left of the application.OSC addresses follow this structure:

4.2.1 Master

/master/mute {0,1} :
Toggle application mute state.

/master/gain {-90.:0.} :
Adjust application output gain.

4.2.2 Bus

/bus/{A,B,C,D}/name {STRING} :
Set name for selected bus.

/bus/{A,B,C,D}/mute {0,1} :
Toggle mute state for selected bus.

/bus/{A,B,C,D}/gain {-90.:0.} :
Control output gain for selected bus.

Each bus contains 16 outputs plus a sub channel:

4.2.2.1 Outputs

/bus/{A,B,C,D}/output/{1:16}/name {STRING} :
Name specific output on selected bus.

/bus/{A,B,C,D}/output/{1:16}/pan {-200.:200.} :
Position output in stereo field: center (0.), left (-100.), right (100.), or wider positioning (-200. to 200.).

/bus/{A,B,C,D}/output/{1:16}/weight {-90.:0.} :
Adjust panning weight to maintain iso-energy from incoming signal. Balance signal distribution without altering overall timbre.

/bus/{A,B,C,D}/output/{1:16}/gain {-90.:0.} :
Apply gain adjustment that affects original timbre, useful for speaker compensation.

/bus/{A,B,C,D}/output/{1:16}/delay {0.:2000.} :
Add timing delay for speaker placement compensation.

4.2.2.2 Sub

/bus/{A,B,C,D}/subwoofer/{STRING} :
Name subwoofer track for selected bus.
/bus/{A,B,C,D}/subwoofer/crossover_mode {Reduced + Sub, Full + No Sub, Full + Sub } :
Select subwoofer management mode:

- Reduced + Sub: Applies high-pass filter at specified crossover frequency
- Full No Sub: Bypasses subwoofer management
- Full + Sub: Outputs filtered sub alongside unfiltered original signals

/bus/{A,B,C,D}/subwoofer/crossover_freq {20.:120.} :
Set crossover frequency threshold.
/bus/{A,B,C,D}/subwoofer/gain "{-90.:0.} :
Adjust subwoofer output level.
/bus/{A,B,C,D}/subwoofer/delay {0.:2000.} :
Apply subwoofer timing delay for placement compensation.

4.2.3 Direct to Master

Bypass upmix processing when needed:

/bus/direct-to-master/mute {0,1} :
Toggle Direct to Master section mute state.

/bus/direct-to-master/gain {-90.:0.} :
Adjust Direct to Master section gain.

4.2.4 Routing Matrixes

Control signal routing with these matrix commands:

/matrix/input/{1:8} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} {0,1} :
Route audio from application input to bus inputs and Direct to Master section (16 gate states per input).

/matrix/output/{1:24} {0,1} :
Route audio from internal processing to physical outputs (76 gate states per output, representing 4 buses × (16 outputs + 1 sub) plus 8 Direct to Master channels).