

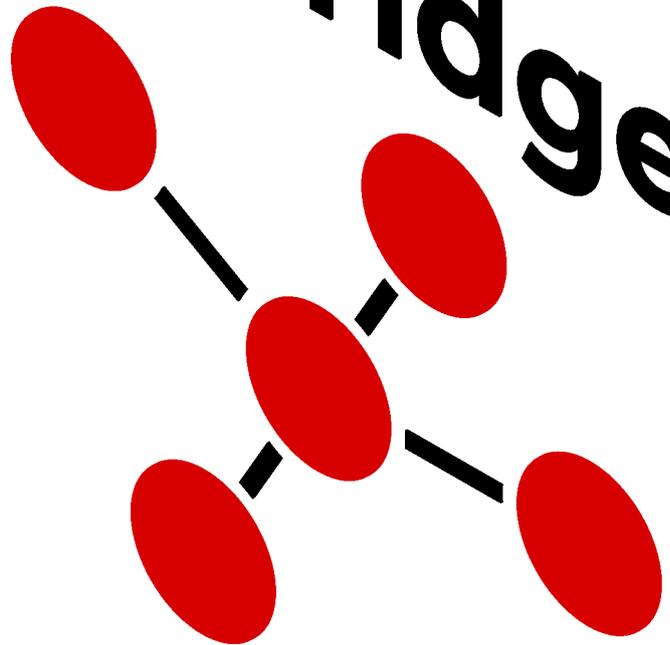
# S

**En-Bridge**

**Software manual**

**1.2 en**

**En-Bridge**



## Notes on document version

All previous versions of this document are hereby no longer valid.

### Version 1.2:

Multi sound object page added.

#### Refer to:

⇒ Chapter 4.3 "Multi sound object page" on page 10.

Dedicated (reserved) UDP port number for d&b devices added.

#### Refer to:

⇒ Chapter 5 "Bridging modules" on page 11.

ADM OSC bridging added.

#### Refer to:

⇒ Chapter 5.6 "ADM OSC bridging" on page 17.

## General information

En-Bridge Software manual

Version: 1.2 en, 05/2024, DOC07137

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**Keep this document in a safe place so that it is available for future reference.**

We recommend you to regularly check the d&b website for the latest version of this document.

d&b audiotechnik GmbH & Co. KG  
Eugen-Adolff-Str. 134, D-71522 Backnang, Germany  
T +49-7191-9669-0, F +49-7191-95 00 00  
docadmin@dbaudio.com, www.dbaudio.com

<b>1</b>	<b>What is En-Bridge</b> .....	<b>4</b>
<b>2</b>	<b>General configuration of En-Bridge (with one DS100 Signal Engine)</b> .....	<b>5</b>
2.1	General settings page.....	5
2.2	Sound objects page.....	6
2.3	Going online.....	6
<b>3</b>	<b>Configuration of En-Bridge with two DS100 Signal Engines</b> .....	<b>7</b>
3.1	Extend mode.....	7
3.2	Parallel mode.....	7
3.3	Mirror mode.....	8
<b>4</b>	<b>Testing and troubleshooting features</b> .....	<b>9</b>
4.1	En-Bridge object GUI.....	9
4.2	Statistics page.....	9
4.3	Multi sound object page.....	10
<b>5</b>	<b>Bridging modules</b> .....	<b>11</b>
5.1	d&b Generic OSC bridging.....	11
5.2	d&b DAW plug-in bridging.....	11
5.3	DiGiCo OSC bridging.....	12
5.4	Solid State Logic OSC bridging.....	14
5.5	BlackTrax RTTrPM bridging.....	15
5.6	ADM OSC bridging.....	17

# 1 What is En-Bridge

En-Bridge is a software tool for d&b Soundscape systems which interconnects d&b Signal Engines and 3<sup>rd</sup> party devices such as control software or tracking systems that require the consolidated handling of sound object data.

Such data comprises:

- Object position,
- En-Space gain,
- Spread,
- Delay mode
- and mapping area.

As there is normally no method to keep multiple connected OSC controllers synchronized with regard to the sound object attributes mentioned above that some or all of them may send to the same d&b Signal Engine, En-Bridge offers a bridging matrix for up to 128 sound objects that can be flexibly assigned per object and input device.

En-Bridge receives sound object data from 3<sup>rd</sup> party devices and distributes it to up to two connected Signal Engines. It also synchronizes two Signal Engines to enable automatic data updates, parallel processing and backup schemes.

To more easily integrate with OSC controllers, En-Bridge offers preconfigured bridging modules for commonly used devices.

Furthermore, En-Bridge incorporates simplified control and logging functions for testing and troubleshooting.

The software is available for Windows and macOS operating systems.

## System requirements

### PC:

Intel/AMD (Intel i5/3<sup>rd</sup> generation or higher).

Win 10 (64 Bit) or higher.

### Mac (Intel):

Intel (i5/i7 3<sup>rd</sup> generation or higher).

macOS 10.15 or higher.

### Mac (Apple Silicon):

macOS 13.0 or higher.

### Ethernet Network:

1 Gbit or faster, **cable connection** recommended (**no WiFi**).

### RAM / Free disk space:

8 GB / 20 MB.

### Screen resolution:

1280 x 800 or higher.

## Application updates

En-Bridge features an in-app update function that checks for new versions at every application start or when triggered manually.

This manual assumes good working knowledge of d&b systems in general and Soundscape systems in particular, specifically as far as the contents of d&b T1 501, available for download at [www.dbaudio.com](http://www.dbaudio.com), are concerned.

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## NOTICE!

### Important notes when running software-based OSC controllers.

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Only one OSC controller can be run on the same computer, i.e., just a DAW with the d&b Soundscape plug-in, or just En-Snap. The reason is that because all OSC applications have to use the same UDP port per machine, it would not be possible to differentiate which data belongs to which application.

This in turn would lead to errors and time outs.

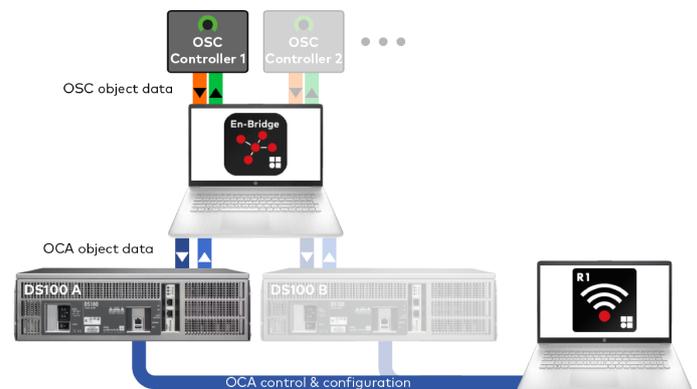
Since version 2.4, En-Bridge uses OCA to communicate with the DS100. This means that it can be run in parallel with one OSC controller on the same machine.

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## Minimum hardware setup requiring En-Bridge

As soon as more than one OSC controller is in use, there is a need to update one with the changes made by the other.

The following illustration shows how and where En-Bridge fits into the data stream between OSC controllers and DS100s.

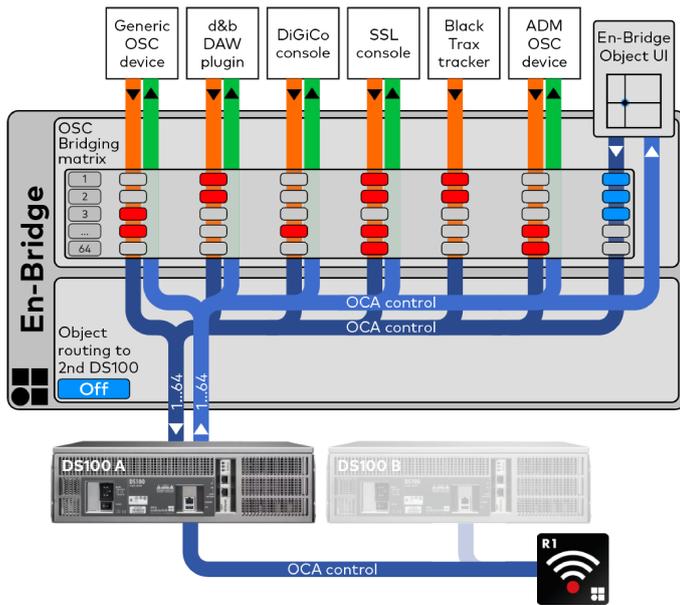


If you use two DS100 Signal Engines, you must make sure that they are equipped with the same licenses and that they are operating on the same firmware revision.

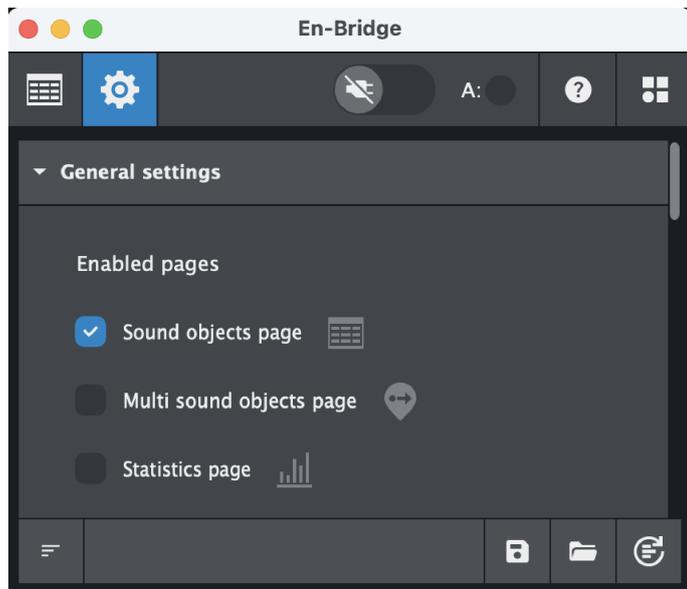
Always use the latest available firmware for your DS100 Signal Engines.

All necessary configuration steps are explained on the following pages, but you can also use the context-sensitive built-in Help function of En-Bridge by clicking the question mark icon (?).

## 2 General configuration of En-Bridge (with one DS100 Signal Engine)

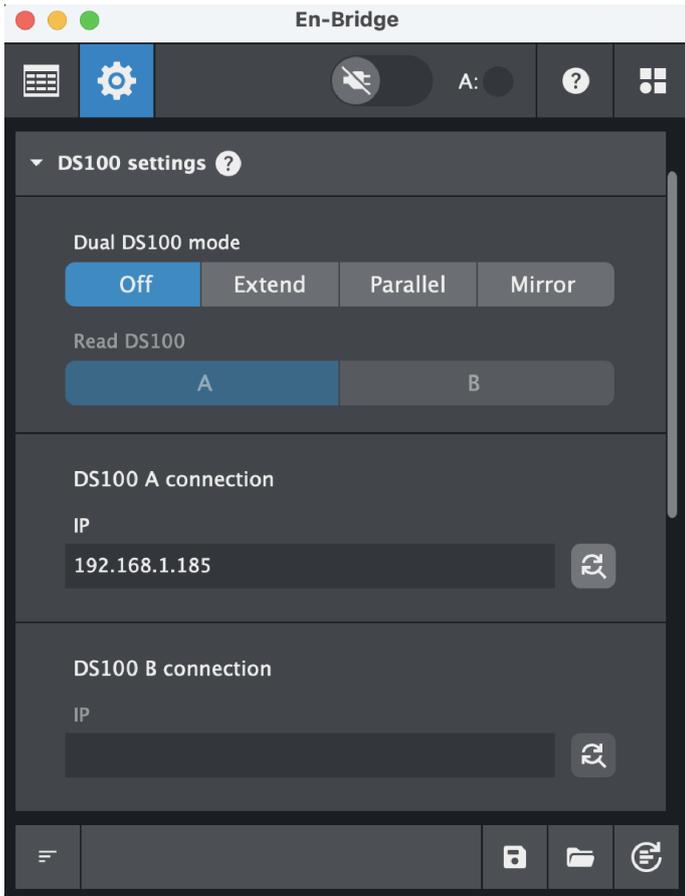


**Make sure that all devices reside within the network and have compatible IP settings.**

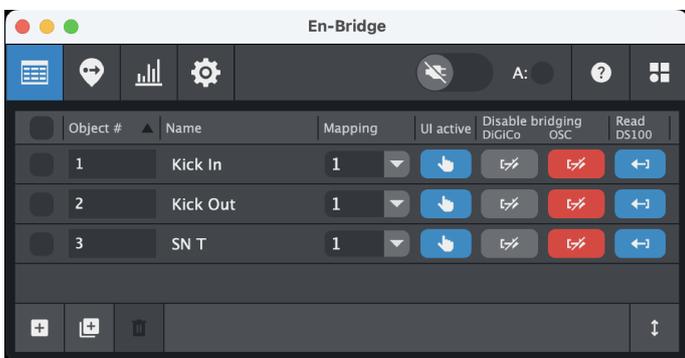


### 2.1 General settings page

1. Under «General settings», make sure that at least the «Sound objects page» is enabled as shown in the screen shot opposite.



2. Further down, specify the IP address of your DS100 Signal Engine («DS100 A connection»). Use the looking glass function to scan for available DS100s on the network or enter an IP address manually.
3. Set the 2<sup>nd</sup> DS100 to «Off».
4. Configure at least one OSC bridging module. Refer to ⇒ Chapter 5 "Bridging modules" on page 11 for details.



## 2.2 Sound objects page

1. Add one or multiple sound objects to be bridged by using the controls on the bottom left of the application window ().
  - ↳ New sound objects will always be added sequentially to the end of the list. Their IDs will be incremented according to the highest existing sound object ID on the list.
2. Adjust the desired «Mapping» area for your objects.
  - ↳ By default, newly created objects are assigned to «Mapping» area 1 ().

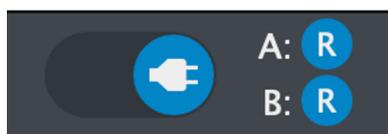
All activated bridging modules will appear under «Disable bridging».

Per module and sound object you can select, whether its data should be forwarded () to the DS100 or not ().

«Read DS100» () determines whether data for this object is polled from the DS100 and forwarded to the bridged OSC controllers.

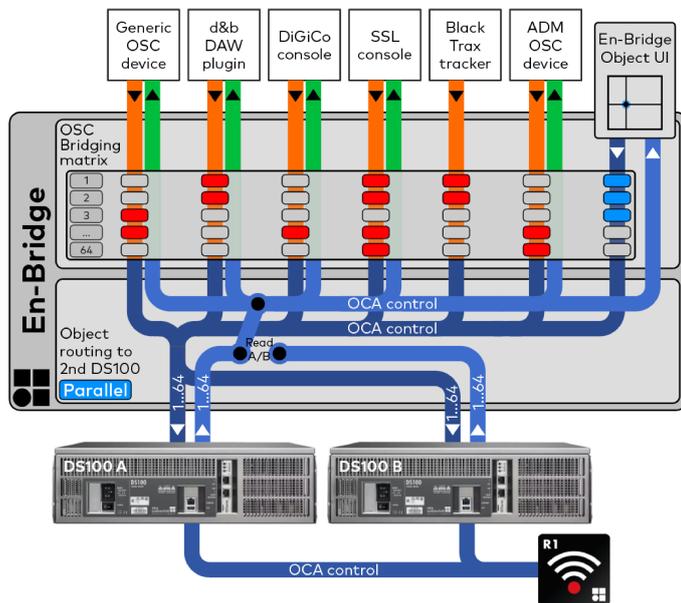
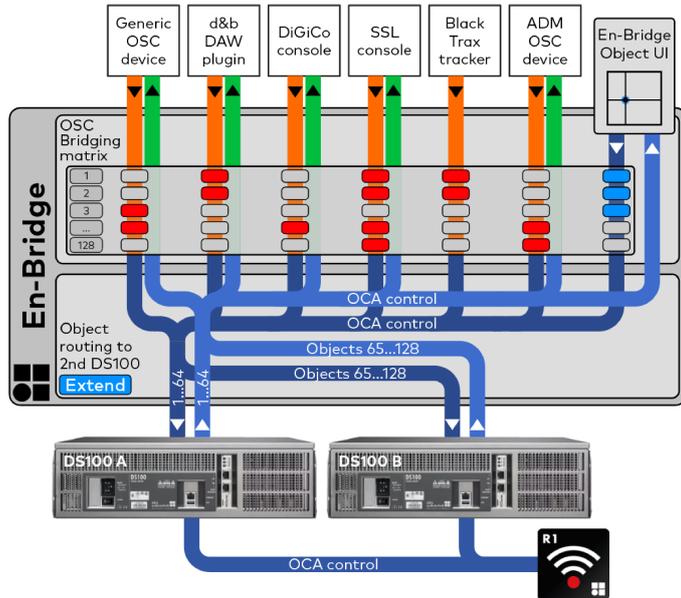
## 2.3 Going online

- ⇒ Click the «Online» button on the top right of the application window to put En-Bridge into operation.
- ↳ Next to the button, corresponding LEDs will indicate whether the specified DS100s are online.



### 3 Configuration of En-Bridge with two DS100 Signal Engines

For some applications, two DS100s are required. Always make sure that both DS100s use the same firmware version and have identical licenses activated.



On the «Settings page», enter the IP address of the second or "B" DS100 into the respective field.

You may use the magnifier icon (🔍) to scan the network for all available DS100s or enter the IP address manually.

The following modes are available when using two DS100s.

#### 3.1 Extend mode

Use this mode when more than 64 sound objects are required.

En-Bridge will forward sound object IDs 1 - 64 to DS100 A, and sound object IDs 65 - 128 to DS100 B.

For this, incoming sound object IDs 65 - 128 will be translated into sound object IDs 1 - 64 for DS100 B.

En-Bridge subscribes to both DS100s.

The data from sound object IDs 1 - 64 from DS100 A and forwarded 1:1 to all bridged devices.

The data from sound object IDs 1 - 64 from DS100 B will be translated into sound object IDs 65 - 128 and then forwarded to all bridged devices as such.

#### 3.2 Parallel mode

In "Parallel" mode, incoming messages are sent to both DS100s simultaneously.

Set the «Read» status to the DS100, En-Bridge should poll for object data to return back to all bridged devices.

One application for this mode is when one DS100 should serve as a backup for the other, and you want to manually switch the «Read» device, when required. Both DS100s have to be configured identically in R1 beforehand, must have identical input routing and the same licenses activated.

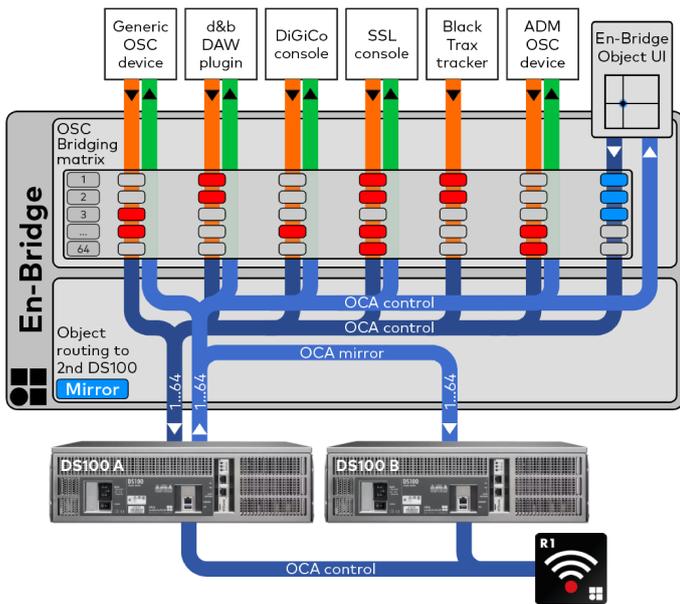
In case of switch over, the audio outputs of the second DS100 have to be routed to the system by means external to En-Bridge.

Another thinkable application could be if both DS100 shall process the same objects with the same relative or absolute coordinates, but are rendering their output on two different loudspeaker setups, e.g. for two different venues, simultaneously.

In this case, both DS100s must be initially configured as desired in R1 and must receive the same audio input.

En-Bridge receives data from both DS100s. Only data from the DS100 that has been set to «Read» on the «Settings» page in En-Bridge will be forwarded to the bridged devices.

The other DS100 is only monitored to determine whether it is still online and functioning normally.



### 3.3 Mirror mode

In contrast to "Parallel" mode, the application for this mode is when the second DS100 shall automatically take over from the first with regard to the «Read» status in case the first unit becomes unresponsive.

Both DS100s have to be configured identically in R1 beforehand and both must have identical licenses activated and the same input signals routed to them.

In case of switch over, the audio outputs of the second DS100 have to be routed to the system by means external to En-Bridge.

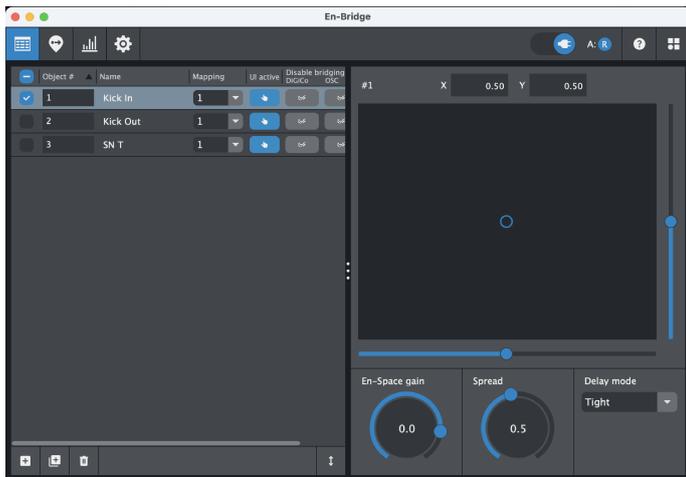
As long as it is responding, DS100 A is automatically set to «Read» on the «Settings» page in En-Bridge. Its data will be received and forwarded to the bridged devices.

Data from DS100 B will be received in the background to monitor its online status, but will not be forwarded. Rather, En-Bridge compares the data from both machines. Should DS100 A differ from DS100 B, which will happen when R1 or another OSC controller that is not integrated through En-Bridge only modifies object data on DS100 A, En-Bridge automatically modifies the data on DS100 B to match DS100 A.

Should DS100 A not transmit object data or its periodic "heartbeat" signal any more, the «Read» status is automatically switched to DS100 B. From then on, its data will not only be received but also forwarded to all bridged devices. DS100 B therefore takes over the functionality of DS100 A in this situation.

DS100 B retains the «Read» status as long as it transmits object data or its own regular "heartbeat" signal. Should DS100 A come back online, it will become the backup for DS100 B and will be treated in the same way as DS100 B when DS100 A is the «Read» device.

## 4 Testing and troubleshooting features



### 4.1 En-Bridge object GUI

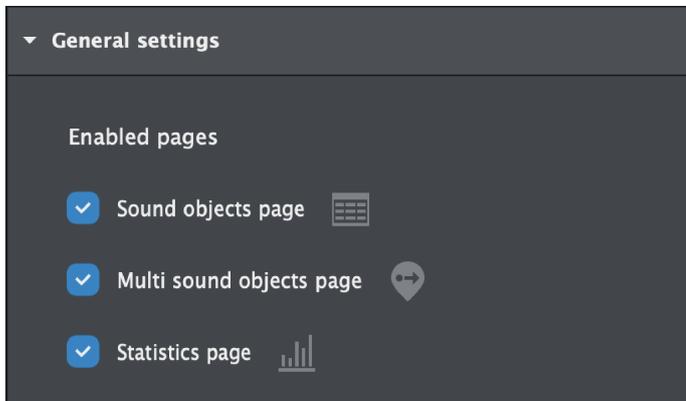
En-Bridge features a simplified GUI on the «Sound objects» page. It appears whenever you select a single sound object from the list.

The GUI shows...

- Relative «x/y position»,
- «En-Space gain»,
- «Spread»
- and «Delay mode»

... of the object as polled from the DS100, as long as «Read DS100» is active (  ) for this object.

⇒ Set «UI active» (  ) for an object to not only monitor its parameters but also manipulate them directly in En-Bridge.



### 4.2 Statistics page

1. The «Statistics» page must be enabled on the «Settings» page under «General settings» by clicking the bar-graph icon.

↳ A navigation icon (  ) then appears on the top left of the application window.

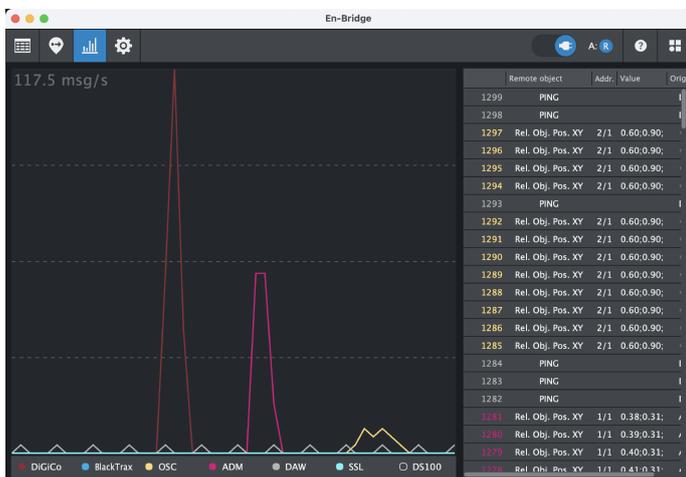
The graph on the left shows the traffic rate of all active bridging modules over time, color-coded according to the bridging modules.

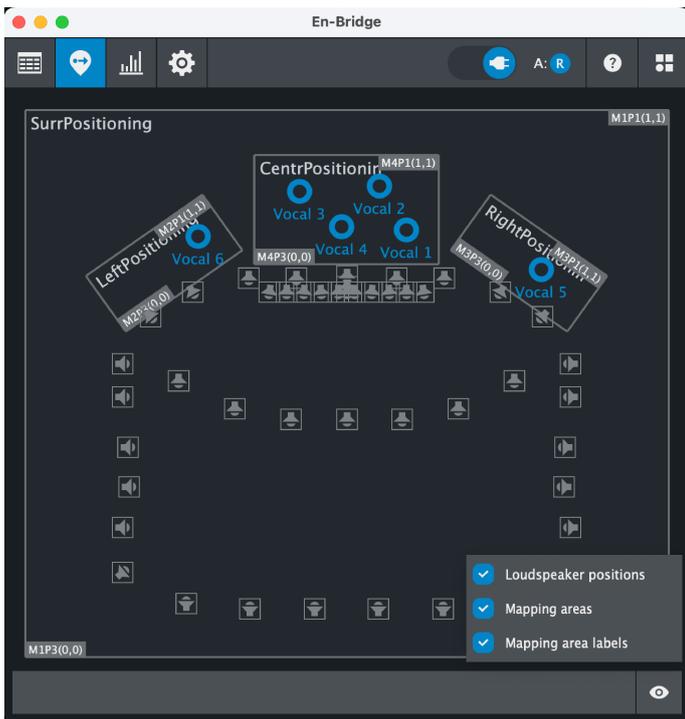
2. Click the «DS100» LED (  ) at the bottom right of the graph window to also show the outgoing DS100 traffic.
- ↳ The traffic rate scale automatically adjusts according to the highest occurring value in any of the displayed graphs.

On the right, the last 200 messages are shown in tabular form.

The «Statistics» page can be undocked into a separate window by dragging its icon out of the main application window.

3. Close the window to redock.





### 4.3 Multi sound object page

This view shows all sound objects, all mapping areas and all loudspeakers simultaneously.

⇒ Click on the eye icon in the lower left of the window to adjust display options.

↳ This is a powerful tool to verify that all coordinate transformations that might be necessary when interfacing with other systems are setup correctly and that objects are positioned as expected.

The «Multi sound object» page can be undocked into a separate window by dragging its icon out of the main application window.

⇒ Close the window to redock.

## 5 Bridging modules

The various bridging modules to connect to different bespoke devices can be configured on the ⇒ «General settings» page. We will continuously expand the list of available modules.

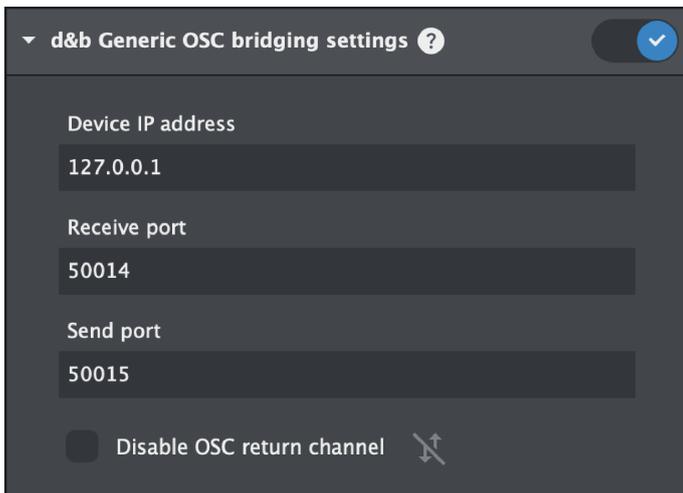
### NOTICE!

#### Important note when using multiple bridging modules

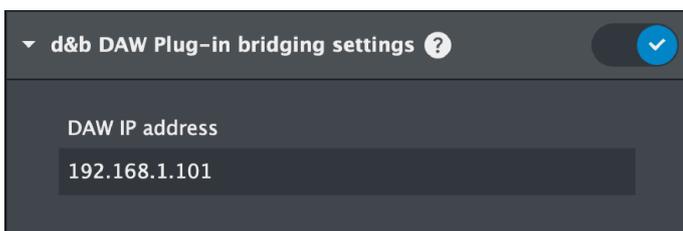
Many bridging modules require a "Send port" (the UDP port on the bridged device to which En-Bridge sends data, which is also the port number from which En-Bridge sends this data) and a "Receive port" (the UDP port on which En-Bridge receives data from the bridged device, which corresponds to the port number from which the bridged device sends data).

These port numbers must be unique for each bridging module.

For d&b devices, the UDP port **50011** is reserved and should not be used as receive port for other OSC devices or 3<sup>rd</sup> party software.



The screenshot shows the 'd&b Generic OSC bridging settings' panel. It features a title bar with a dropdown arrow, the text 'd&b Generic OSC bridging settings', a help icon, and a toggle switch. Below the title bar are three input fields: 'Device IP address' with the value '127.0.0.1', 'Receive port' with the value '50014', and 'Send port' with the value '50015'. At the bottom, there is a checkbox labeled 'Disable OSC return channel' which is currently unchecked, and a small icon of a crossed-out arrow.



The screenshot shows the 'd&b DAW Plug-in bridging settings' panel. It features a title bar with a dropdown arrow, the text 'd&b DAW Plug-in bridging settings', a help icon, and a toggle switch. Below the title bar is one input field: 'DAW IP address' with the value '192.168.1.101'.

### 5.1 d&b Generic OSC bridging

Use this module to interface a DS100 with bridging devices for which no bespoke module exists in En-Bridge.

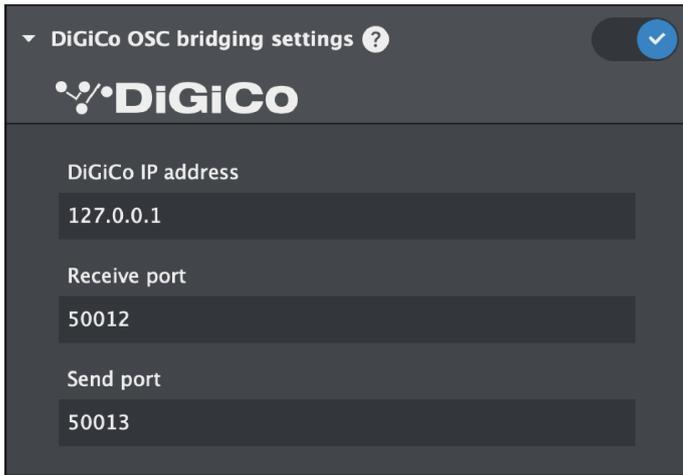
You might have to configure the bridged device to send (and receive) OSC messages in a format that conforms to what the DS100 expects.

- ⇒ Please check the settings/documentation of the bridged device and verify the message format and content using the ⇒ «Statistics» page in En-Bridge.
  - ↳ In case it is not desired that En-Bridge returns OSC data to the bridged generic device, please activate «Disable OSC return channel».

### 5.2 d&b DAW plug-in bridging

Use this module to interface a DS100 with a DAW or console using a variant of the d&b Soundscape plug-in, e.g., Avid consoles.

1. Enter the IP address of the console's or DAW's control port in the respective field in the module.
2. In the plug-in of the DAW or console, enter the IP address of the host running En-Bridge.
  - ↳ Please also consult the d&b Soundscape plug-in manual.



### 5.3 DiGiCo OSC bridging

Use this module to connect DiGiCo consoles from the Sdxx or Quantum series (firmware V 1528 or newer) to d&b Signal Engines to control up to 128 sound objects.

The basic functionality of the DiGiCo OSC bridging module is identical to the d&b Generic OSC bridging module. Nevertheless, the DiGiCo module is available in addition to the generic one so that a DiGiCo console and another generic OSC controller can be used simultaneously.

**Note:** The "T" (Theater) variant of the DiGiCo firmware with the "Auto update" option enabled may cause excessive traffic due to its built-in parameter polling feature.

To prevent traffic overloads, we recommend a reasonable minimum interval between firing snapshots on the console in such situations.

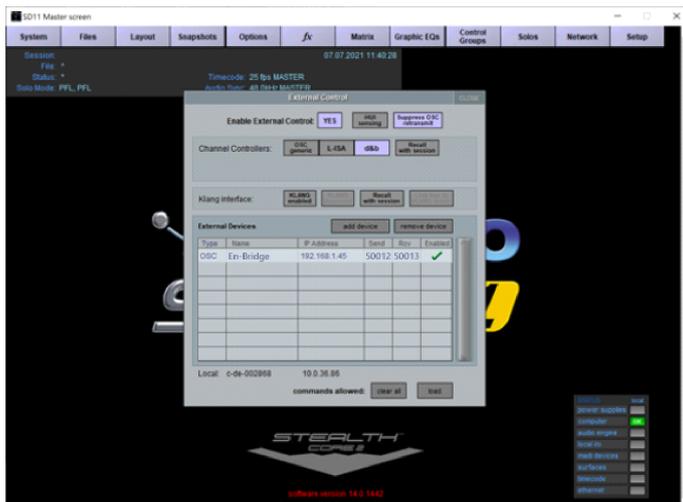
Use the ⇒ «Statistics» page to check the traffic rate.

#### To configure En-Bridge...

1. Enter the IP address of the console's control port.
2. Enter the UDP port number on which the console is listening and to which En-Bridge should be sending polled OSC messages under «Send port».
3. Enter the UDP port number from which the console is sending messages and to which En-Bridge shall be listening for messages under «Receive port».

#### To configure your DiGiCo console...

1. First select «External Control» from the Setup menu on the master screen.
2. Switch «Enable External Control» to «YES».
3. Switch on «Suppress OSC retransmit» to prevent the console from replying to every incoming OSC message.
4. Switch on «Recall with session» if loading a session shall trigger the console to send all OSC messages initially.
5. Select «add device» ⇒ «other osc».
6. Enter a name of your choice.
7. Enter the IP address of the computer running En-Bridge.
8. Under «Send», enter the UDP port number that corresponds to the «Receive» port number configured in En-Bridge.
9. Under «Rcv», enter the UDP port number that corresponds to the «Send» port number configured in En-Bridge.
10. Click «OK» to confirm.
11. Click the red cross in the «Enabled» column to the right of your entries.
  - ↳ A green check mark will appear instead.

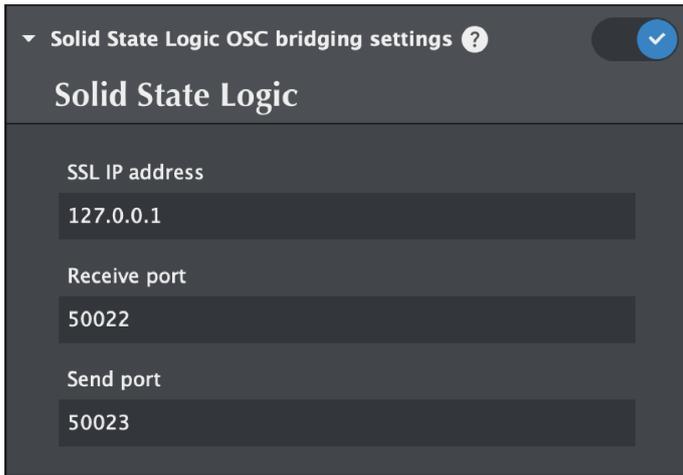




- ⇒ On any desired «Input» or «Group Control» strip, switch on «d&b Control» in the «Channel Outputs» window.
  - ↳ The standard panner will change to the d&b Soundscape control.



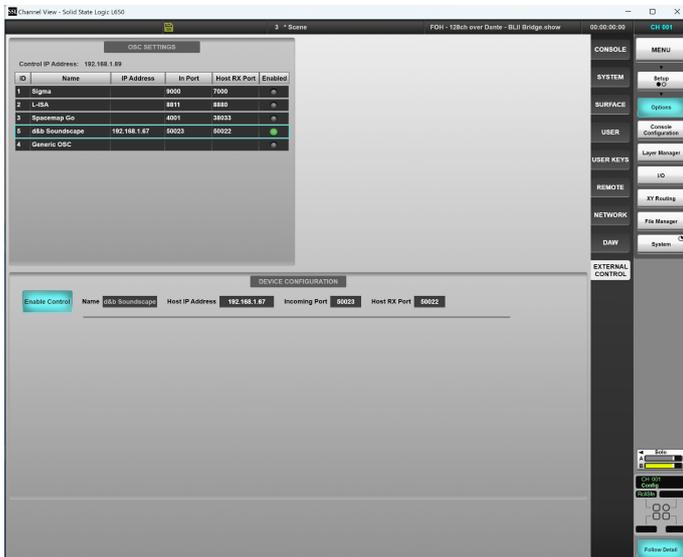
- ⇒ With the Soundscape control open, tap «Object Number» or «Mapping» to specify the sound object ID and mapping area.
  - ↳ **Note:** Sound object IDs 65 - 128 require En-Bridge to be configured in ⇒ Extend mode.



## 5.4 Solid State Logic OSC bridging

Use this module to interface with SSL Live consoles running firmware version 5.2 or newer.

1. Enter the IP address of the console's control port.
2. Enter the UDP port number on which the console is listening for messages and to which En-Bridge shall be sending polled OSC messages under «Send port».
3. Enter the UDP port number from which the console is sending messages and to which En-Bridge shall be listening for messages under «Receive port».



### On the SSL Live console

1. Go to MENU ⇒ Setup ⇒ EXTERNAL CONTROL.
2. From the list in the top half of the screen, tap «d&b Soundscape».
3. In the lower half of the screen, tap «Enable Control».
  - ↳ It should light up in blue.
4. Under «Host IP Address», enter the IP address of the computer running En-Bridge.
5. Under «Incoming Port», enter the UDP port number from which En-Bridge is sending and to which the console shall be listening.
6. Under «Host RX Port», enter the UDP port number from which the SSL console is sending and at which En-Bridge shall be receiving data.



### Channel path

1. Tap «External Control», which is located right above the «Input/Routing» button.
2. On the right half of the screen, tap «Select Device» to select «d&b Soundscape».
  - ↳ The sound object ID a channel path controls corresponds to the channel number by default. The «Control Path Num Offset» control allows you to operate a different sound object ID by inserting the offset between the channel path number and the desired object ID into the respective field.
3. Further below, select the desired mapping area.

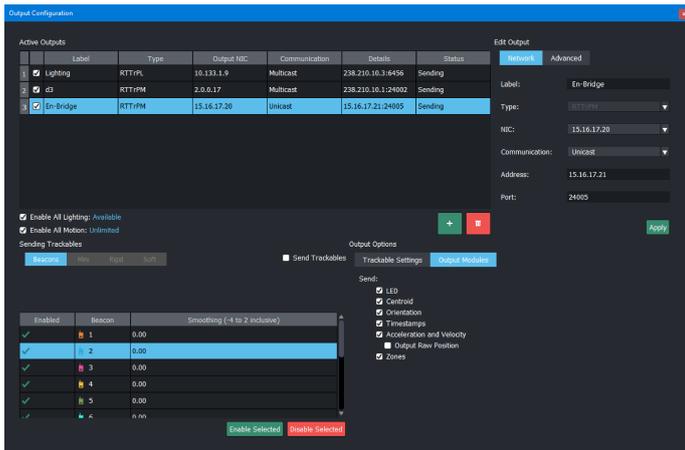


## 5.5 BlackTrax RTTrPM bridging

Use this module to integrate a BlackTrax tracking system. En-Bridge will translate the BlackTrax protocol into OCA.

On the «BlackTrax RTTrPM bridging settings» page, apply the following settings:

1. Under «Receive port», enter the UDP port number at which En-Bridge should listen for incoming messages.
  - ↳ Beacon indices allow remapping of BlackTrax beacon numbers to sound object IDs, if necessary. By default, the BlackTrax beacon numbers will be used as sound object IDs. The same applies to any beacon IDs that are not remapped.
2. Set «Centroid position» as the «Data type».
  - ↳ Absolute or Relative refers to how the incoming x/y values shall be interpreted, either as absolute values in meters or relative to the selected mapping area.
3. Set coordinate system rotations or inversions, as required.
4. Define the offset of the BlackTrax origin from the d&b origin (in d&b coordinates).
5. Set the mapping area to which the incoming values shall be linked to when the mode is set to relative.
  - ↳ The «Mapping min.» and «Mapping max.» controls allow to define the corners of the mapping area using the BlackTrax coordinate system. Beacons that breach this area will be mapped alongside the borders of the area and not positioned further outward.



In the BlackTrax software, add an active output and label it appropriately, e.g. «En-Bridge».

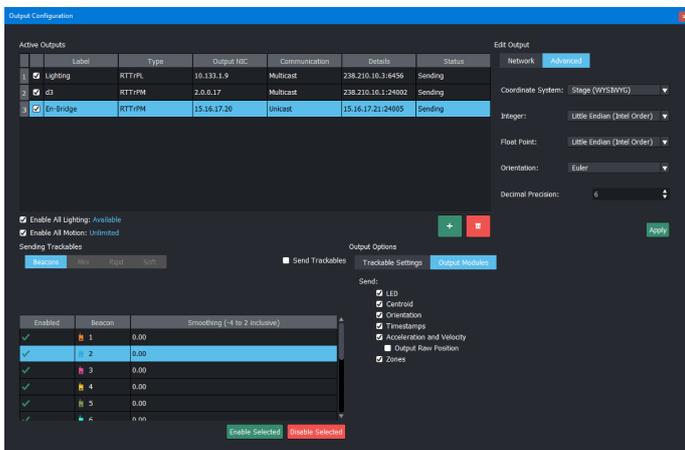
**Note:** Make sure that «Send: Centroid» under «Output Options» is checked.

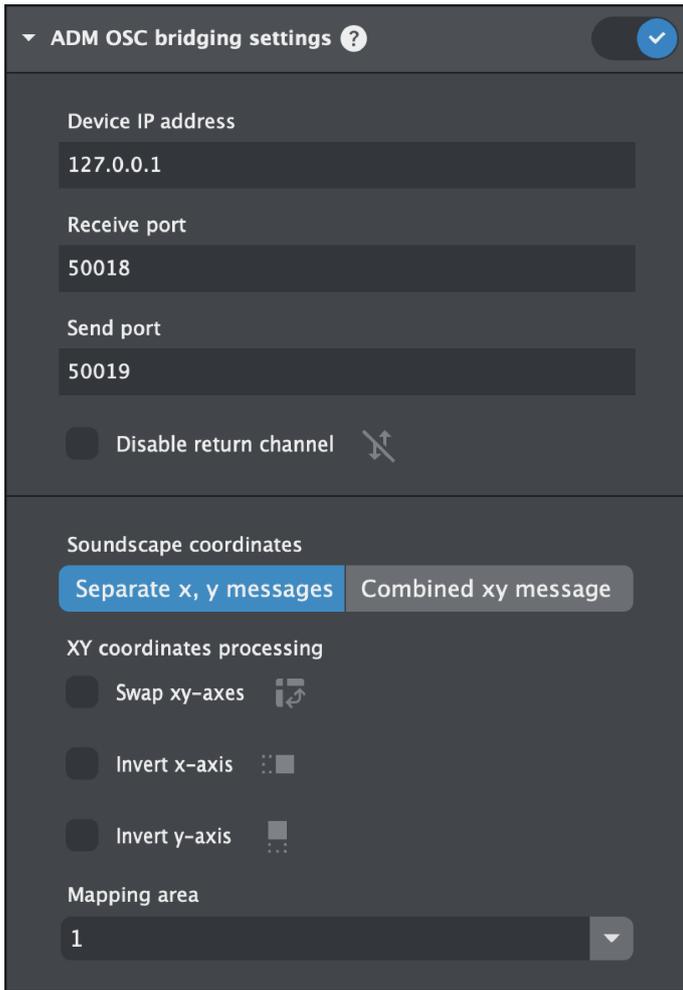
**Under «Network», apply the following settings:**

1. **NIC:** Select the network interface of the BlackTrax system which is in the same physical and logical network as En-Bridge.
2. **Communication:** Set to «Unicast».
3. **Address:** Enter the IP address of the computer running En-Bridge.
4. **Port:** Enter the same UDP port number as in the BlackTrax RTT/PM bridging module in En-Bridge.

**Under «Advanced», apply the following settings:**

1. **Coordinate System:** «Stage».
  - ↳ This corresponds to the Soundscape x/y order.
2. **Integer:** Little Endian (Intel Order).
3. **Float Point:** Little Endian (Intel order).
4. **Orientation:** Euler.





## 5.6 ADM OSC bridging

Use this module to interface with applications that use the Audio Definition Model (ADM) OSC protocol definition.

You might have to configure the bridged device to send (and receive) positioning data in a way compatible to «Mapping area position» and orientation in the venue. Please check the settings/documentation of the bridged device and verify the message content using the statistics page in En-Bridge.

1. «Device IP address» is the IP address of the ADM OSC device.
2. Under «Receive port», enter the UDP port number at which En-Bridge shall listen for incoming messages.
3. Under «Send port», enter the UDP port number of the ADM OSC device to which En-Bridge shall send outgoing OSC messages.
4. In case it is not desired that En-Bridge returns OSC data to the bridged ADM device, please activate «Disable OSC return channel».
5. Adjust coordinate translation and processing as required. Use the Multi Sound Object page to verify your settings.

En-Bridge accepts polar and cartesian coordinates as input values, but can only output cartesian coordinates towards bridged devices.

### Supported OSC strings for ADM OSC

Polar coordinates (input only), to be converted in to d&b relative positions:

- /adm/obj/n/azim
- /adm/obj/n/elev
- /adm/obj/n/dist
- /adm/obj/n/ead

Cartesian input and output coordinates, to be converted into d&b relative positions (when received from bridged device) or generated from d&b relative positions (to be sent to bridged device):

- /adm/obj/n/x
- /adm/obj/n/y
- /adm/obj/n/z
- /adm/obj/n/xyz

As the DS100 cannot make use of the z-coordinate, En-Bridge catches the last known z-value from incoming data, which is then output towards bridged devices.

