AREAL

USER MANUAL

SR1

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***Note**: this product is intended for professional use only in accordance with current EU regulations on volume limitation and must not be used in the consumer sector.*

Storage temperature: -20°C to +60°C

Storage humidity: 5% to 90% RH

Storage atm. limits: 2000 m

PN: ASR25

AREAL BV
Hoek 76 unit 200
2850 Boom - Belgium

Revision: v2.0
Release date: 9th Jan 2026

SR1

TABLE OF CONTENT

SCOPE OF DELIVERY

Included in the box:

A SR1 headphone

B SR1 controller

C USB-C to USB-C (1,5M)

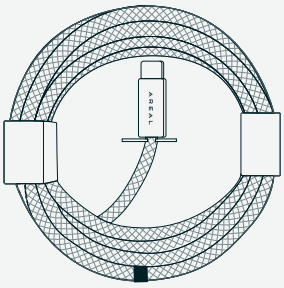
D SR1 Travel case

Optional (not included):

- Areal 12 Volt power adapter

A

C



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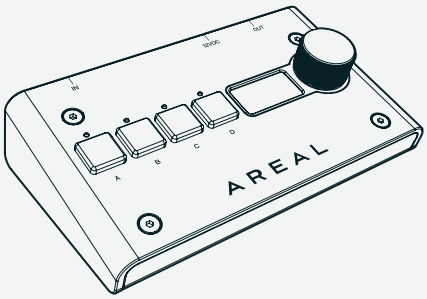

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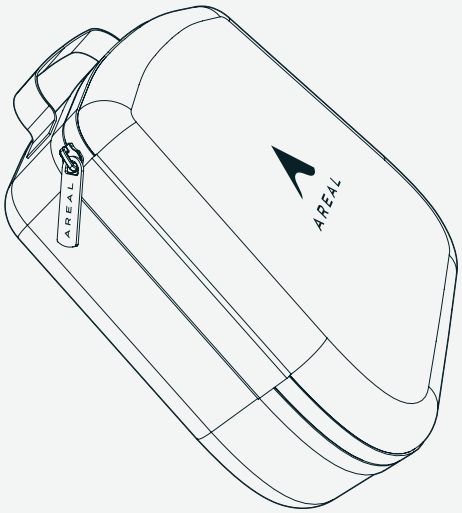


DEVICE DESCRIPTION

The Areal SR1 Spatial Reference Headphone is a professional multi-driver headphone system designed for accurate and portable monitoring of immersive audio content. Powered by Areal's proprietary AIM (Acoustic Image Mapping) technology, the SR1 delivers true spatial imaging without relying on binaural emulation.

Each earcup features a dedicated full-range driver for stereo compatibility and three additional spatial drivers for rendering front, rear, and height information. The SR1 is bundled with a multichannel controller and DAC that connects via USB-C, enabling easy switching between immersive and stereo modes. Designed for sound professionals, creators, and educators working with next-generation audio formats, the SR1 offers a consistent immersive monitoring environment, anywhere.

PRODUCT OVERVIEW

The Areal SR1 system consists of two main components: the SR1 headphone and the SR1 controller. Together, they form a portable reference tool for stereo, surround, and immersive audio monitoring.

SR1 headphone

The headphone uses a quad-driver architecture, with four drivers per earcup: one full-range driver and three additional spatial drivers used for spatial mapping with Areal's AIM™ (Acoustic Image Mapping) technology. This design allows the SR1 to reproduce front, rear, and height information with true spatial separation.

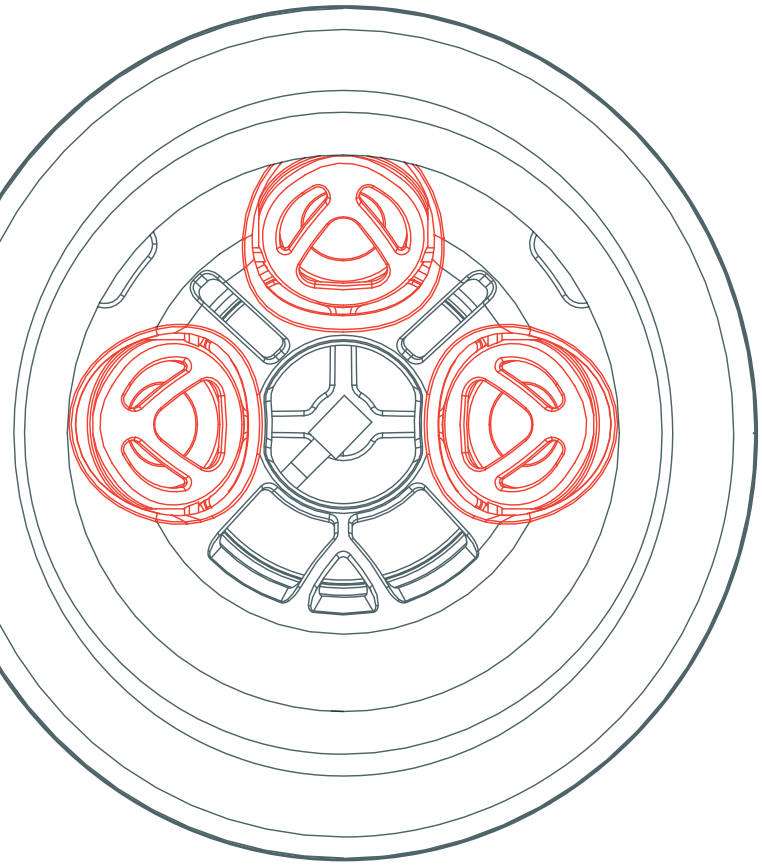
It features a closed-back, over-ear design for isolation and monitoring accuracy, and an adjustable headband for comfort. Despite the advanced driver system, the SR1 remains lightweight at ~320 g, making it suitable for long listening sessions.

SR1 controller (DAC interface)

The SR1 controller is a multichannel 24-bit / 48 kHz DAC with a built-in headphone amplifier, and acts as the interface between your computer and the SR1 headphone.

On the rear panel, the controller provides a USB-C input for plug-and-play connection with Mac or PC, an optional 12 V DC input (barrel connector) for external power, and a magnetic multipin connector for attaching the headphone.

The front panel includes a rotary push-encoder that controls output volume and menu navigation. Four dedicated buttons allow you to select the operating mode: Stereo Upmix, Normal Stereo, 5.1, or 7.1.4.
A LED display shows mode selection, system settings, and real-time output channel activity.



how the SR1 reproduces surround Information

Instead of using binaural processing or HRTF mapping—which can vary from user to user—the SR1 applies Areal's AIM™ (Acoustic Image Mapping) technology.

Surround information from 5.1 or 7.1.4 formats is blended and distributed across the four drivers in each earcup, creating a direct spatial image that is both natural and reliable.

This approach ensures that height and rear cues are preserved, delivering the same sense of spatial awareness as a surround loudspeaker system, while remaining consistent for every listener regardless of head or ear shape.

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system requirements and limitations

Operating systems evolve continuously. For the latest compatibility details, always refer to the support section of our website.

USB & Class Compliance

The SR1 controller mounts as a class-compliant multichannel audio interface and works with any device that supports such interfaces via USB 2.0 (or higher).

macOS

For Dolby Atmos playback in 7.1.4 format, macOS 12 (Monterey) or higher is required.

Windows OS

Windows 11 standardly supports Stereo, 5.1, and 7.1 layouts.
In order to monitor in 7.1.4 surround, additional third-party software must be installed.

Tablets

The SR1 can be used with tablets. However, since most tablets do not support multi-channel audio output, operation might be limited to stereo monitoring only.

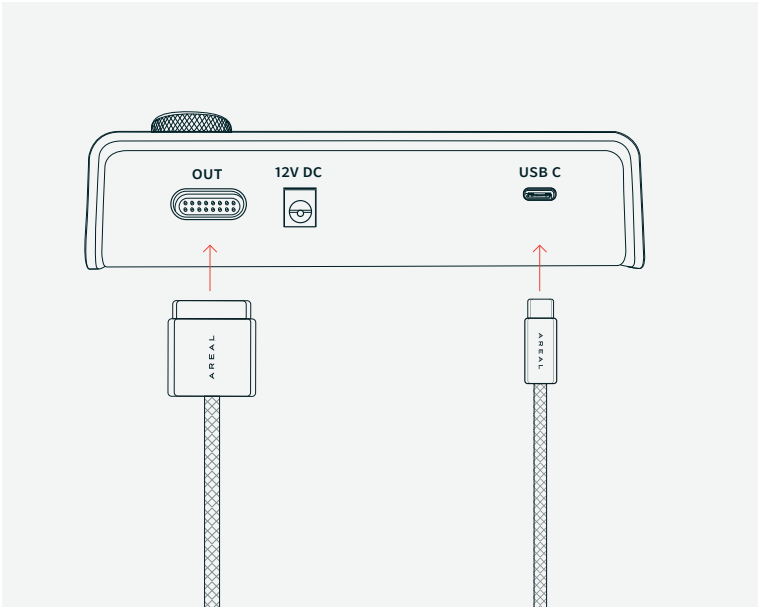
Supported Sample Rate / Bit Depth

The SR1 currently supports only 48 kHz sample rate at 24-bit depth.

INSTALLATION PROCESS

1 Attach the headphone cable to the **OUT** connector on the **SR1 controller**. The magnetic connector will automatically lock when oriented correctly (Areal logo facing up).

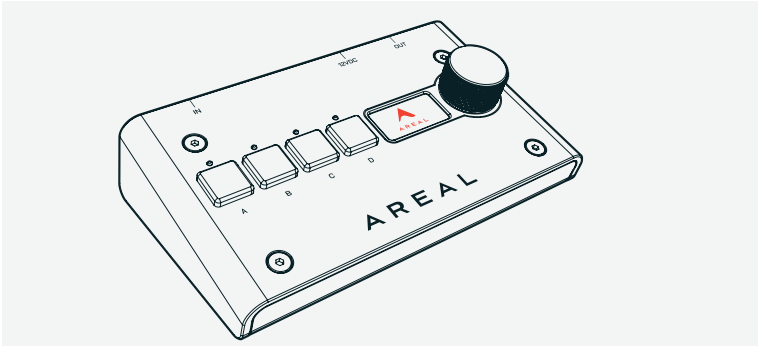
> If upside-down, the magnetic connector will repel, do not try to force it into position.



2 Use the supplied **USB C to C cable** to connect the controller to a free USB port on your computer.
Avoid low-quality USB hubs as they may cause instability. Use a USB-C to USB-A adaptor if needed.

3 The SR1 controller can be powered entirely from your computer's USB-bus power. However, you have the option to connect an external 12V DC power adapter (1.0A, center positive) if your USB bus cannot supply sufficient power.

4 When the device is powered up, the Areal logo will appear on the LED screen. The LED above the current selected mode will light up, and your SR1 is ready to be used as an audio interface on your computer.

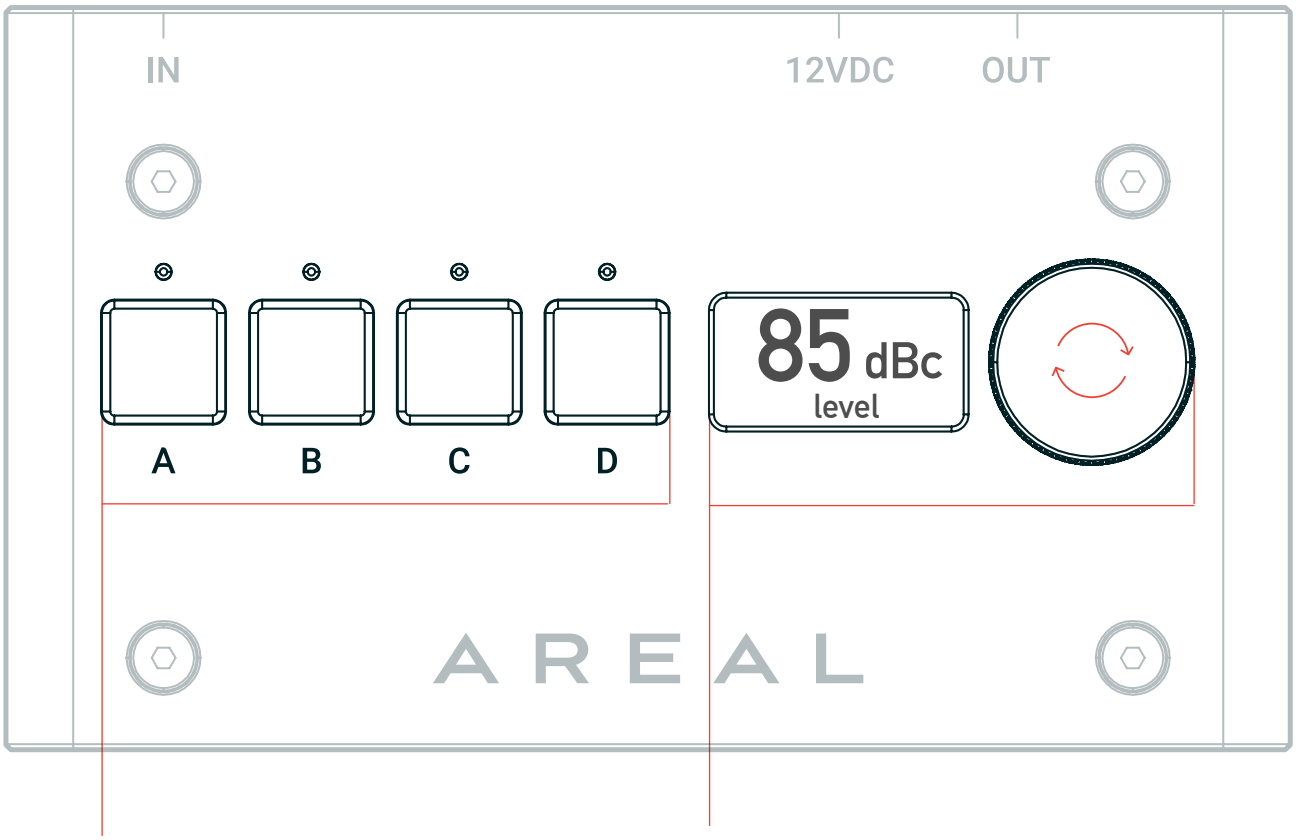


> **SAFETY NOTE** - Always set the volume to a low level (–30 dBFS or less) before wearing the headphone and playing audio. This prevents sudden loud playback and potential hearing damage.

5 Once the output level has been adjusted to a modest volume, it is safe to put on the headphone. Make sure the earcups are positioned correctly over the center of your ears, as the immersive image depends on proper placement of the headphone.

USER INSTRUCTIONS

SR1 controller



FORMAT MODES A–B–C–D

The four buttons on the controller allow you to switch between the available formats:

MODE A – STEREO UPMIX
Stereo signals are processed with the Areal upmix algorithm to create an immersive image.

MODE B – NORMAL STEREO
Standard two-channel playback without upmixing.

MODE C – 5.1 SURROUND EMULATION
Six-channel surround monitoring.

MODE D – 7.1.4 SURROUND EMULATION
Full twelve-channel immersive monitoring.

HEADPHONE OUTPUT VOLUME

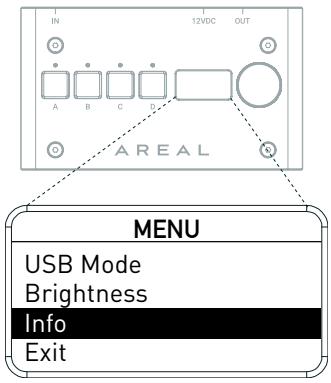
The headphone output level is controlled by turning the rotary encoder on the front panel.

In dBFS mode, the encoder adjusts the output volume from –80 dBFS to 0 dBFS.

In SPL mode, the encoder displays the calibrated acoustic level in dBc SPL (C-weighted), from 93 dBc SPL to 13 dBc SPL.

Settings Menu

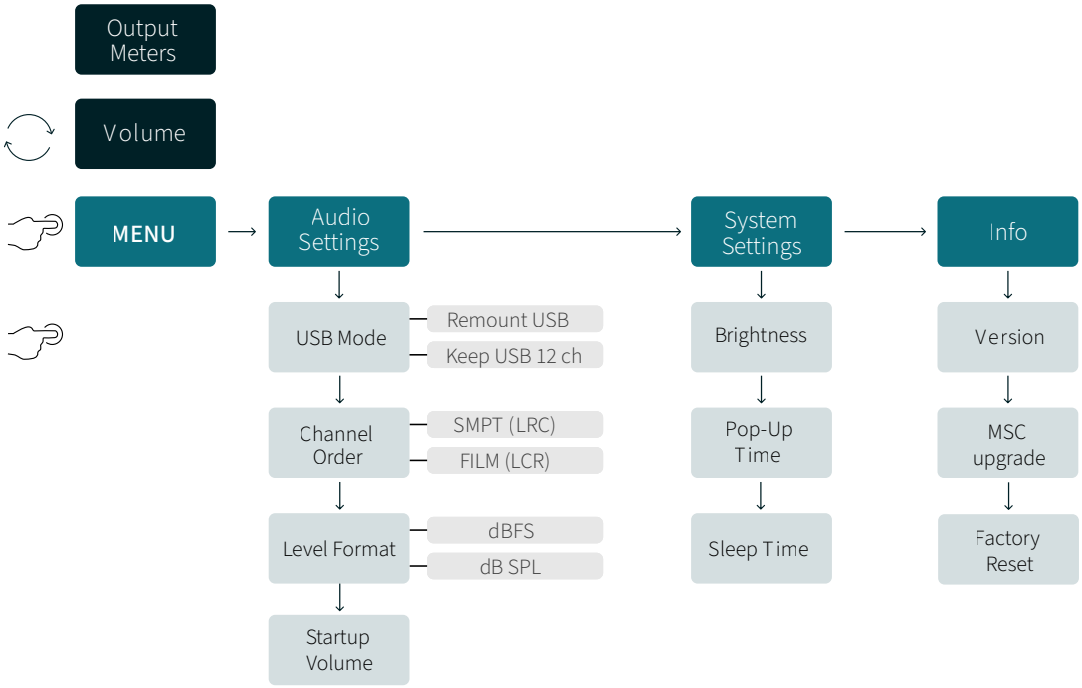
Before configuring the SR1 in your computer, it is important to understand the settings that can be accessed via the LED display and the rotary encoder.



NAVIGATING THE MENU

Press the rotary encoder to enter the settings menu. Turn the encoder to scroll through options and press to confirm. To cancel and return to the home screen, select “Exit.”

LED SCREEN FLOWCHART



USB MODE

Menu → Audio Settings → USB Mode

Determines how the SR1 interface behaves when switching between the A–B–C–D format modes.

- **Remount USB**

  When this option is selected, the SR1 will dismount and remount as a new audio interface each time you change format mode. In mode A (Upmixed Stereo) and mode B (Stereo), the SR1 mounts as a 2-channel device. In mode C (5.1) it mounts as a 6-channel device, and in mode D (7.1.4) it mounts as a 12-channel device.

  This option is recommended if your playback software can automatically detect the available output channels and adjust accordingly. It allows you to switch between stereo and surround formats without manually reconfiguring the output routing, for example when using Apple Music.

- **Keep USB 12 Ch**

  When this option is selected, the SR1 remains mounted as a fixed 12-channel output device, regardless of which format mode is active. This avoids potential dropouts or reconnection problems in audio software that does not support automatic channel detection.
  In this mode, the user must manually ensure that the correct output signals are routed within the software to the twelve SR1 USB channels.

CHANNEL ORDER

Menu → Audio Settings → Channel Order

This setting defines the order of the first three channels when using surround modes C (5.1) or D (7.1.4).

- **SMPTE (LRC)**

  Sets the channel order to the SMPTE standard: Left, Right, Center.

- **Film (LCR)**

  Sets the channel order to the Film standard: Left, Center, Right.

LEVEL FORMAT

Menu → Audio Settings → Level Format

This option selects how the headphone output level is displayed.

- **dBFS**

  Displays the output level in dB Full Scale, with a range from –80 dB to 0 dB.

- **dB SPL**

  Displays the output level in dB SPL (C-weighted), based on the measurement of input channel 1.

POP-UP TIME

Menu → System Settings → Pop-Up Time

Defines how long the volume level and the selected mode remain visible on the display after adjustment.

SLEEP TIME

Menu → System Settings → Sleep Time

Determines how long it takes before the screen enters sleep mode. Adjustable from Never to 30 minutes

BRIGHTNESS

Menu → System Settings → Brightness

Adjusts the brightness of the LED display to suit different environments.

INFO

Menu → Info

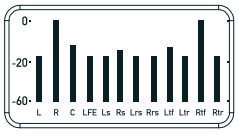
Displays the current software and hardware version of the SR1.

From this menu you can also perform a factory reset.

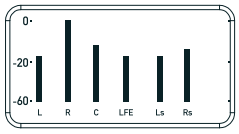
HOME SCREEN OUTPUT MONITORING

The LED display shows real-time output channel activity. When the USB mode is set to Remount USB, the active channels are displayed. When the USB mode is set to Keep USB 12 Channel, all twelve output channels are shown at all times, depending on the selected listening mode, the inactive channels are greyed-out. For example: when a 7.1.4 signal is send to the controller but the listening mode is stereo, the inactive channels are greyed out.

EXAMPLES - REMOUNT USB



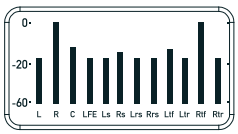
MODE D



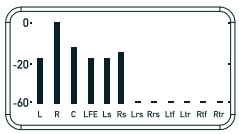
MODE C

MODE A & B

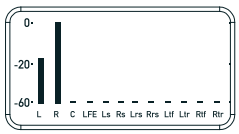
EXAMPLES - KEEP USB 12 CHANNELS



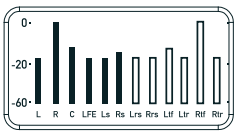
MODE D



MODE C



MODE A & B



INACTIVE CHANNELS
(7.1.4 SIGNAL / 5.1 LISTENING MODE)

first time software setup

Once the SR1 is connected to your computer, it will appear as a class-compliant audio interface. No additional drivers are required. The following sections explain how to configure the device on macOS and Windows when using it for the first time.

FACTORY DEFAULT CONFIGURATION

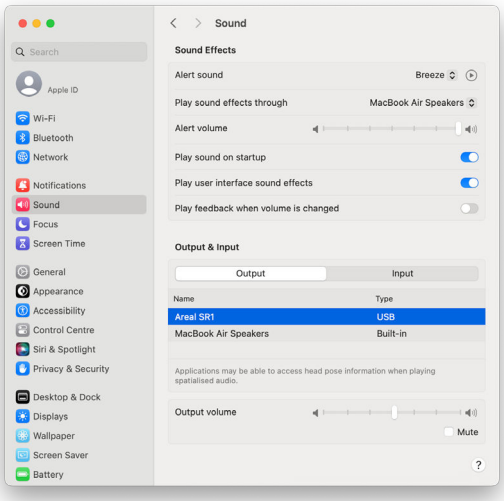
The SR1 comes with the following factory default settings:

- **Selected Mode**: A (Upmix)
- **USB Mode**: Remount USB
- **Channel Order**: LRC
- **Level Format**: dBFS

MACOS SETUP

ALLOW ACCESSORY

When you connect the SR1 to your Mac for the first time, it boots in Mode A (Upmix). MacOS may display a message asking "**Allow accessory to connect?**". If prompted, click Allow to enable communication.

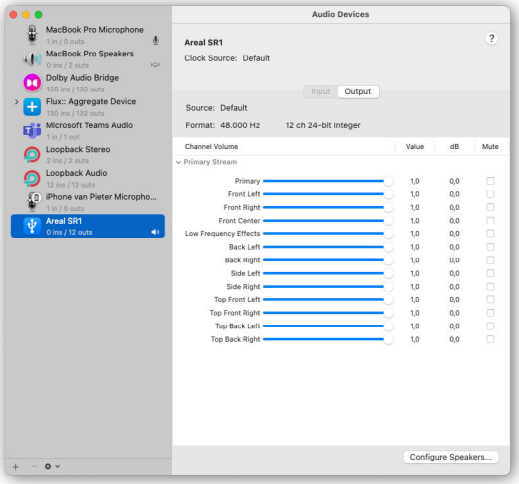


NOTE - if the SR1 USB mode is set to Remount USB, macOS automatically assigns the correct number of outputs based on the mode selected and will show this prompt again the first time you switch from Mode A or B to Mode C or D, as the SR1 remounts as a new interface for each mode.

SELECT SR1 AS OUTPUT DEVICE

macOS will recognize the SR1 automatically.
To select it as your audio device:

1. Open System Preferences → Sound → Output.
2. Select **Areal SR1** from the list of devices.



CHANNEL ASSIGNMENT

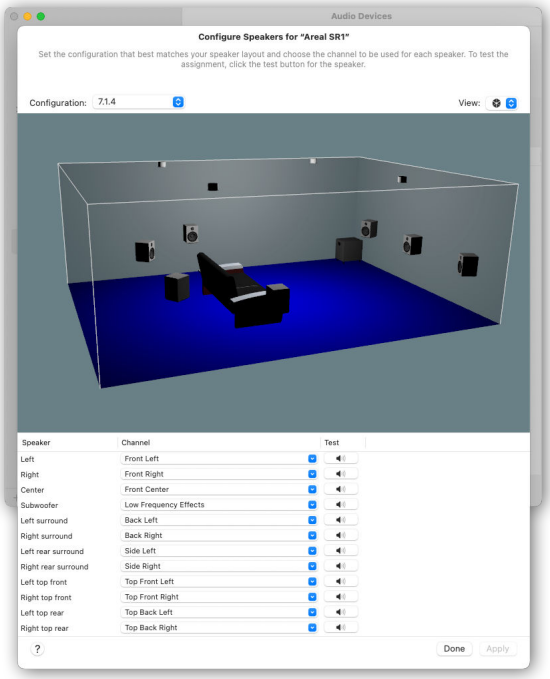
1. On the SR1 controller, set the mode do D.
2. Open Audio/MIDI Setup on your Mac.
3. Select Areal SR1 from the list of audio devices.
4. Go to the Output tab and press Configure Speakers.

NOTE - For Dolby Atmos playback in 7.1.4, macOS 12 or higher is required.

IMPORTANT - When the SR1 is set to keep 12 channels, the configuration window allows you to select either stereo, 5.1 or 7.1.4 layouts from the dropdown menu. In this configuration it's up to the user to ensure that the configuration in macOS matches the selected mode of the controller.

The speaker configuration screen lists the standard channel names under Speaker, while the SR1's twelve USB outputs are listed and selectable under Channel. Use the routing table in the next chapter to map each speaker to the correct USB channel.

Use the Test buttons to check playback for the corresponding speaker.



Windows OS Setup

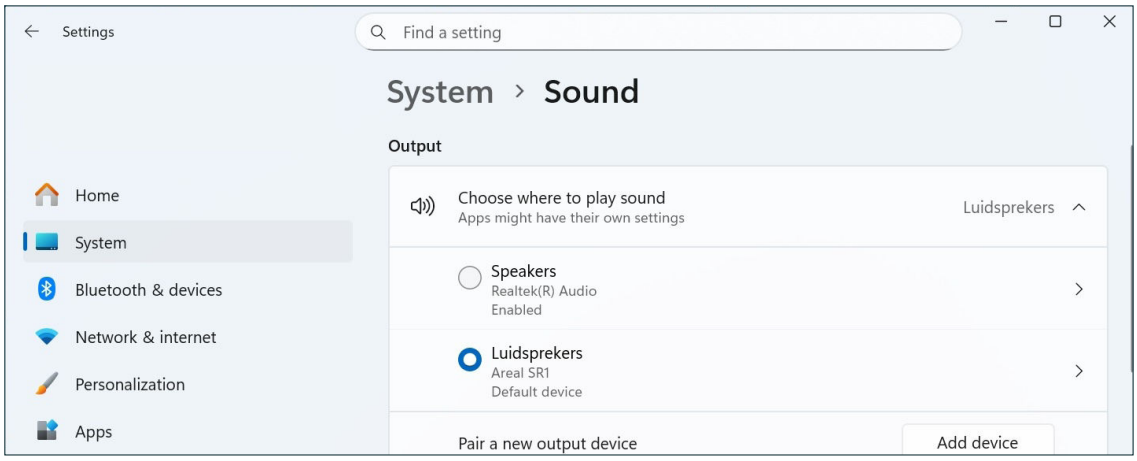
Windows 11 natively supports Stereo, 5.1, and 7.1 layouts. Unlike macOS, custom speaker mapping is not possible within Windows without third-party software.

To monitor in 7.1.4 or to perform manual loudspeaker configuration:

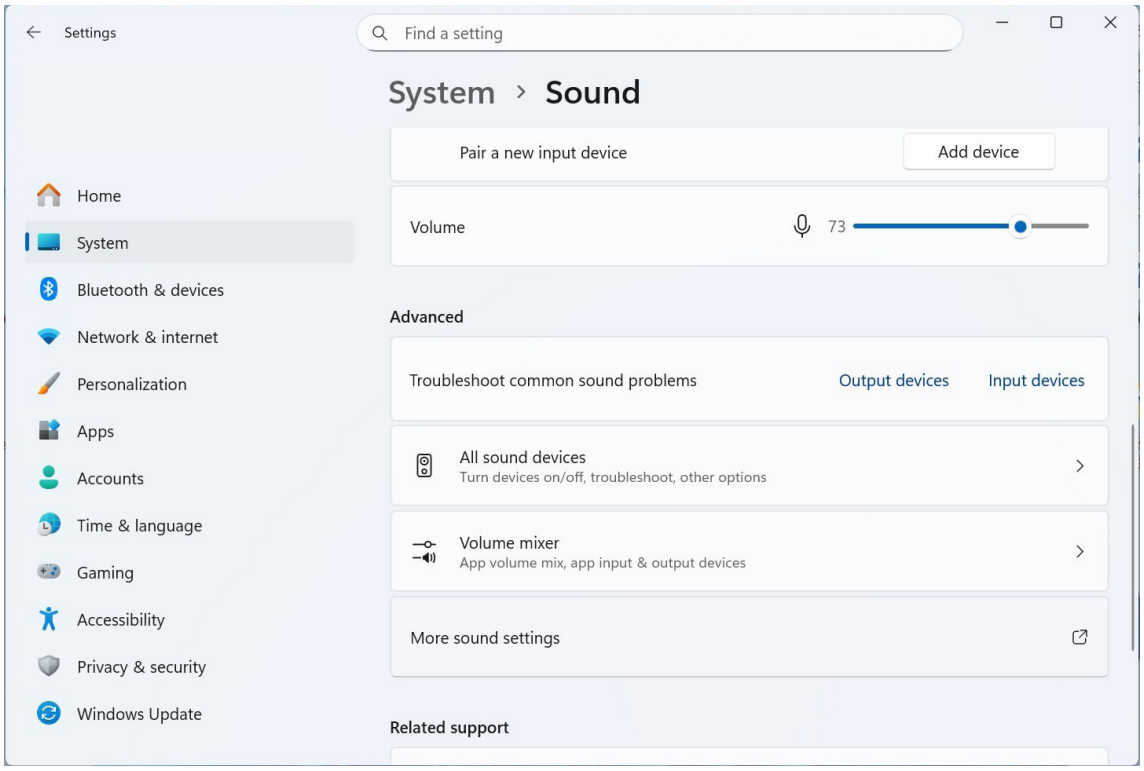
- Use your DAW with custom routing.
- Use the Dolby Atmos Renderer (standalone or plugin).

Testing your 5.1 or 7.1 configuration:

Go to: Windows → Settings → Systems → Sound

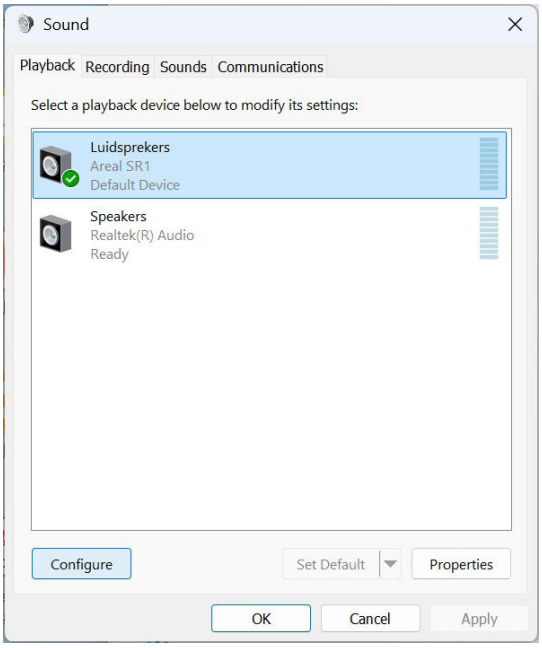


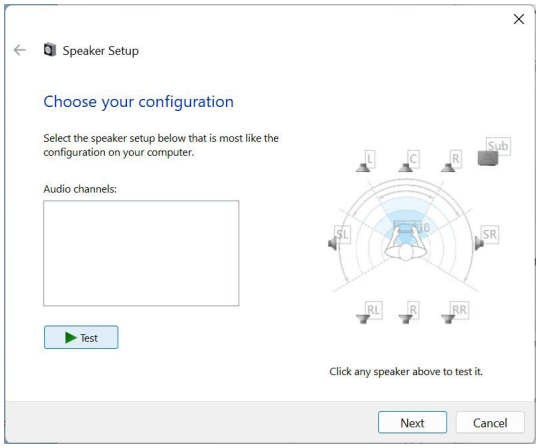
→ Scroll down to Advanced
→ Click: More sound settings



→ Select the Areal SR1 Loudspeaker
→ Click: Configure

Depending on the active SR1 mode, you will be presented with a Stereo, 5.1, or 7.1 setup.
Use the ► Test button to check playback for all channels, or click the speaker icons to play sound on the individual speakers.





DAW AND AUDIO SOFTWARE SETUP

When using the SR1 in professional audio applications or DAWs, it may be necessary to configure output routing manually.

1 Open the audio device settings in your software and select Areal SR1 as the output interface.

NOTE - the SR1 only supports a sample rate of 48kHz and cannot be set to any other rate.

2 Enable all 12 output channels.
Refer to your audio software's manual for instructions on how to activate outputs.

3 Create mono and stereo or surround buses that match your project format.

4 Route each bus to the correct USB output channels of the SR1, using the routing table as a guide.

ROUTING TABLE

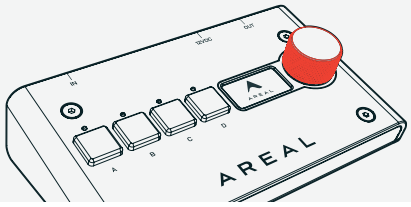
The following routing table provides guidance for manually assigning USB output channels in your audio software or DAW. The table shows how each USB channel corresponds to speaker positions, depending on the format mode selected on the SR1 controller.

Mode:	**A / B**	**C**	**C**	**D**	**D**
USB Channel	**Upmix / Stereo**	**5.1 SMPTE (LRC)**	**5.1 FILM (LCR)**	**7.1.4 SMPTE (LRC)**	**7.1.4 FILM (LCR)**
1	Left (L)	Left (L)	Left (L)	Left (L)	Left (L)
2	Right (R)	Right (R)	Center (C)	Right (R)	Center (C)
3	—	Center (C)	Right (R)	Center (C)	Right (R)
4	—	Low Frequency Effects (LFE)	Low Frequency Effects (LFE)	Low Frequency Effects (LFE)	Low Frequency Effects (LFE)
5	—	Rear Left (SL)	Rear Left (SL)	Left Surround (Ls)	Left Surround (Ls)
6	—	Rear Right (SR)	Rear Right (SR)	Right Surround (Rs)	Right Surround (Rs)
7	—	—	—	Left Rear Surround (Lrs)	Left Rear Surround (Lrs)
8	—	—	—	Right Rear Surround (Rrs)	Right Rear Surround (Rrs)
9	—	—	—	Left Top Front (Ltf)	Left Top Front (Ltf)
10	—	—	—	Right Top Front (Rtf)	Right Top Front (Rtf)
11	—	—	—	Left Top Rear (Ltr)	Left Top Rear (Ltr)
12	—	—	—	Right Top Rear (Rtr)	Right Top Rear (Rtr)

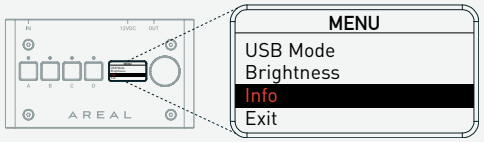
software update

The following section explains how to manually update the device.

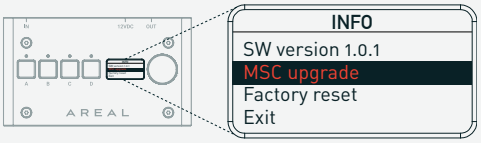
1 Push the knob on the controller



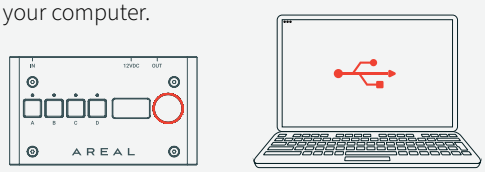
2 Navigate from Main menu → Info



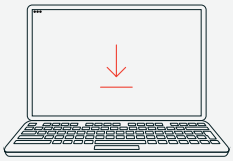
3 Navigate from Info → MSC upgrade



4 Push knob to enter USB drive mode. The USB drive will appear as a removable storage device on your computer.



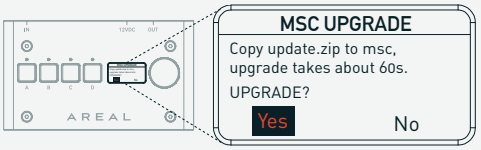
5 Download the software to your computer. Find the latest software update at **areal.world/sr1-update**



6 Copy the **update.zip** file to the mass storage.

> **Do not rename the update file. It must be named update.zip for the update to work.**

7 Navigate to 'Yes' using the knob and press to initiate upgrade.

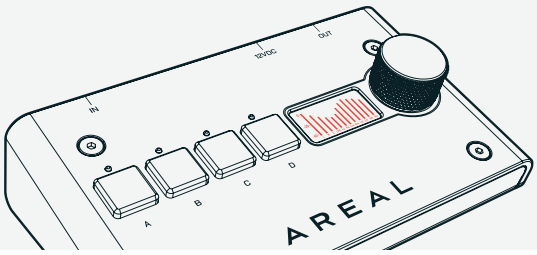


8 No further action is required.

The device will reboot automatically several times during the update process.

> **Do not disconnect the device from the power source while the update is in progress.**

9 At the end of the update, the controller will automatically return to the home screen.



SAFETY

Read the following safety precautions carefully before installing the Areal SR1

Note: this product is intended for professional use only in accordance with current EU regulations on volume limitation and must not be used in the consumer sector.

Before attempting installation, operation, cleaning, or maintenance of the Areal SR1 device, read and understand the complete operating instructions provided in this document. Pay special attention to all warnings displayed on the instrument. Failure to read and follow these guidelines could lead to improper or incorrect usage and result in damage to the device.. Improper usage could also cause personal injury, unpredictable results, instrument malfunction, and premature wear to components shortening the lifetime of the device. Such actions may void your warranty. Keep the user manual and any other safety and operating instructions provided with the instrument in a safe place accessible to all users for future reference.

Consult with Areal for latest information
via support@areal.world

The Areal SR1 is designed for safe use when installed correctly and operated in accordance with instructions described in this user manual.

The guidelines in this section explain the potential risks associated with operating this device and provide important supplemental safety information to minimize the risk. Follow the instructions carefully to protect yourself, others, and the device from potential hazards and create a safe work environment. Use this instrument only as specified by the manufacturer to avoid damage of equipment and injury to user(s).

The intended use of this product: multi-driver headphone system designed for accurate and portable monitoring of immersive audio content.

For consuming audio only.

Listening at high volume may cause hearing damage.

Areal BV is not responsible for damage caused by misuse or unauthorized modifications.

Instructions for installation, operation, cleaning, and maintenance as described in this document must be followed. Disconnect the power (USB or 12V) when performing maintenance and cleaning.

Do not allow liquids to enter the interior of the Areal SR1. Protect the instrument against accidental spillages and splashes. Clean up spillages immediately. Do not operate the instrument if liquids have entered the instrument.

The user shall be responsible for any malfunction resulting from improper use, maintenance, repair, damage, or alteration by anyone other than Areal BV or its authorised partners.

The Areal SR1 must be repaired and serviced by Areal BV or an authorised service partner. Do not alter or modify in any way without written approval of Areal BV.

If the Areal SR1 is defective, it should not be used.
Disconnect the unit from USB port or 12V power and contact support@areal.world.

In rare cases, particularly when operating at high volume, the system may restart due to overload conditions.
Reducing the volume may help prevent this issue.

All safety labels and safety markings shall be kept clean and legible. Inspect the safety labels and safety markings and replace them if not legible or identifiable. Contact support@areal.world for replacement labels.

If there is any indication of damage or defects, do not open and attempt to repair the Areal SR1 yourself. Reach out to support@areal.world

Repairs may only be carried out by Areal BV or an authorised service partner.

The Areal SR1 should only be operated from a power source that meets the specifications mentioned in the product's electrical label. Only use a power supply meeting the prescribed specifications.

Children should be under the supervision of an adult when operating the Areal SR1 at all times.

This product is covered by the warranty required under the applicable laws of the country where it was purchased.

If no such legal warranty period is defined, the product is warranted against defects in materials and workmanship for a period of one (1) year from the date of purchase.

Only use an Areal approved adapter.

SYMBOLS


Consult manual before use


Warning sign


Caution is needed when installing and using this device, consult the manual before use


Indoor use only

Alternating Current (AC)


Networking interface.


USB interface.


CE marking


Location of manufacturing


Recycling

Direct Current (DC)


Read the manual


Manufacturing date


Country of manufacturing


AS/NZS CISPR marking (AU)


Emirates Quality Mark (UAE)


FCC certificate marking (US)


KC certificate marking (South Korea)

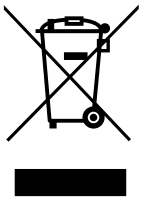
NOM certificate marking (Mexico)

UKCA marking

TECHNICAL DATA

Specification	Value
Input voltage	12VDC ±2.5% ripple: 500mV (Vpp)
Power consumption	12V/370mA, Standby, No-loading 12V/620mA, Headphone load, signal: 12CH 48Khz 24bit sine wave, mode: 7.1.4 5V/1A, Standby, No-loading 5V/2.2A, Headphone load, signal: 12CH 48Khz 24bit sine wave, mode: 7.1.4
Operating Temperature	-20°C to 40°C
Storage Temperature	-20°C to 60°C
Transport Temperature	-20°C to 60°C
Relative Humidity	90±3% (Temperature: 40±2°C)
Storage Relative Humidity	5%–90% RH
Transport Relative Humidity	5%–90% RH
Dimensions (w x d x h)	271 x 95 x 274 mm
Weight including packaging	2,21 kg
Net Weight	0,83 kg
Max. altitude	2000 m
Appliance class	Class III
USB connector	Pin 1: Vcc = +5 VDC / 3 A Pin 2: Data - Pin 3: Data + Pin 4: Ground
Pollution degree	2
Overvoltage category	II

DISPOSAL



This product is designed with high-quality recyclable components.
Dispose of it according to your local regulations for electronic waste.

Proper disposal prevents potential environmental and health risks

CLEANING

Cleaning should be performed after switching off and disconnecting the Areal SR1 from all power sources.

Cleaning of the device's cover should be performed by means of a damp cloth. Make sure that there is no spillage of liquid inside the device, if this is the case, do not turn on the device and contact support@areal.world for further instructions.

TROUBLESHOOTING

If you encounter problems while using the SR1, review the points below before contacting support.

The SR1 controller does not power up while my computer is turned on

- Check that the controller is connected directly to a free USB port on your computer, and not through a passive USB hub.
- Your computer may not supply enough power through the USB bus. In this case, connect a dedicated 12 VDC power supply to the controller's 12 VDC input.

My computer does not show the SR1 as an audio interface option

- Ensure the controller is connected directly to a free USB port and not through a passive hub.
- On macOS: did you click Allow Accessory the first time you connected the SR1? If not, unplug the USB cable, reconnect it, and allow the accessory when prompted.
- Set the SR1 USB Mode to Remount USB and switch between modes A–B–C–D to trigger remounting.
- Try another USB port on your computer.
- Restart your computer and power-cycle the SR1 by unplugging and reconnecting the USB cable and power adaptor.
- Check the latest system requirements to confirm that your operating system is supported.

I do not see all required surround channels (up to 12) in my audio device setup

- Verify that the SR1 is set to mode C (5.1) or mode D (7.1.4).

I do not hear any audio

- Make sure the SR1 controller is powered and connected to your computer.
- Check that the SR1 is selected as the audio output device in your computer or software settings.
- Verify that audio is playing and that the output meters on the home screen show activity.
- Ensure the headphone is properly connected to the magnetic multipin connector.
- Confirm that the output volume is raised to an audible level

The surround channel order is incorrect

If the Left and Right channels are swapped:

- Check the orientation of the headphone, the side with the cable should always be worn on the right.

If the Right and Center channels are swapped:

- Check the Channel Order setting in the SR1 controller menu and switch between SMPTE and FILM.

If other channels are incorrectly mapped, either:

- Set USB Mode to Remount USB and change formats with the A–B–C–D buttons to remount, or
- Use Keep USB 12 Ch mode and manually assign outputs in your system:
    - On macOS, use the Configure Loudspeakers menu within the Audio MIDI Setup
    - In your DAW or audio software of choice, manually route the outputs.
    - On Windows, use the Configure menu within the More sound settings menu.
    - For 7.1.4, use Dolby Atmos Renderer (standalone of plugin).

Why does the system sometimes restart when playing at high volume?

In rare cases, operating the system at maximum volume can cause an overload, which may lead to a restart. Lowering the volume can help prevent this issue.

How is the dB SPL level calibrated ?

The dB SPL is calibrated using the Dolby Atmos calibration sequence. Meaning the dB SPL represents the pink noise output of one simulated speaker. The Left channel is used as reference.

factory reset

If the above steps do not solve the issue, a factory reset may be required.

Always try to power-cycle the SR1 before performing a factory reset.

To perform a factory reset:

- Press the rotary encoder to open the settings menu.
- Navigate to Info → Factory Reset.
- Confirm the reset by pressing the encoder again.

REGULATORY & COMPLIANCE

certifications

This device complies with CE, FCC, LVD, KC and RoHS regulations.
Documentation can be requested on support@areal.world.

emc declaration

This device complies with EMC declaration available upon request.

disposal

Dispose according to local WEEE and e-waste regulations.

CONTACT

AREAL

Hoek 76 unit 200
2850 Boom
Belgium

support@areal.world

www.areal.world