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Orah user guide

Using your Orah camera.

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Getting started

For setting up and connecting your Orah 4i camera see the Quick Start Guide.

> *The stitching box should be connected to LAN. The Orah 4i camera is connected to the POE then connected to the stitching box. The WiFi antenna is connected to the stitching box. Power is connected to stitching box. The stitching box can be turned on.*

For more information about “how to setup the Orah 4i”, please follow the “Quick Start Guide” instructions.

I. Using the web control application

This application is hosted on the Orah stitching box
Follow the following steps to access the application:

1. Connect to the stitching box using WiFi :
    a. Network/SSID: ORAH4I_xxxxxxxxxx
    b. WPAPSK password: 0123456789
2. Open a web browser.
3. Connect to the web control application by connecting to:
    a. http://myorah4i.orah.co
    b. or http://10.224.224.224, 10.224.224.224 being the IP of Orah when you are connected to it’s WiFi.

The Orah web control application uses modern web standards and a responsive design to offer the best browsing experience from small to large screens.
Note: Please note that Javascript must be enabled on your browser.

When connecting your camera to the stitching box, and connecting to the web control application, the stitching box will look for the camera on the network, then connect and start the camera before displaying the preview.

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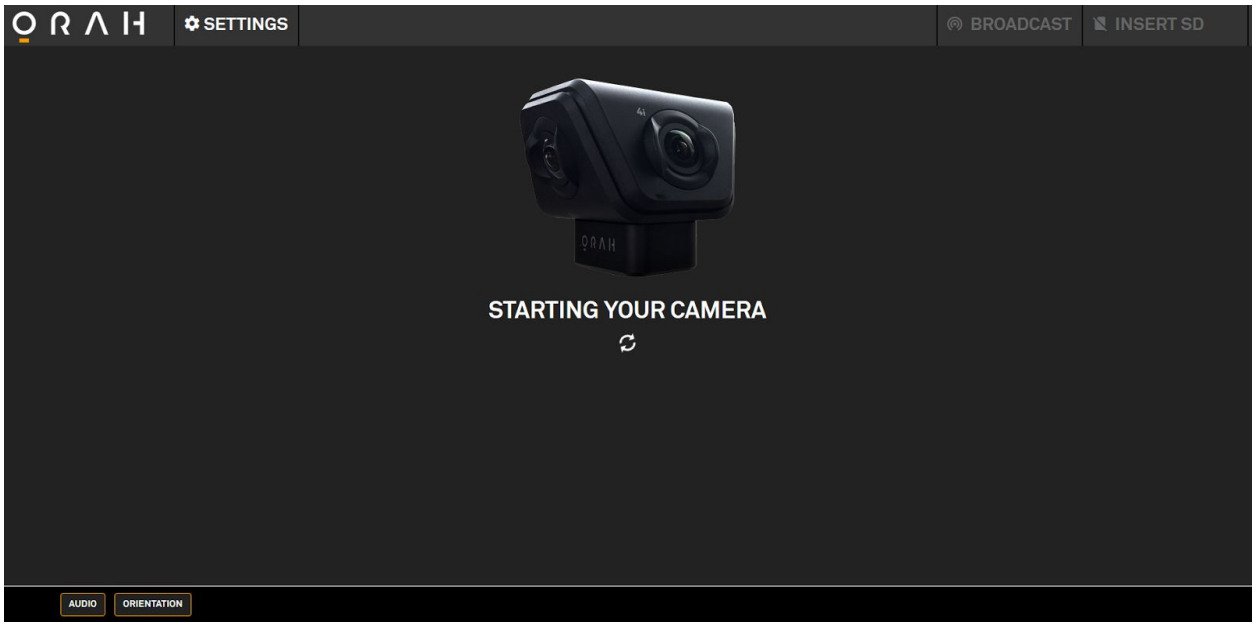

The web control application features a live preview, options to view and change various settings for the stitching box and the Orah 4i camera, as well as controls to start/stop broadcasting live content on the Internet and record to an SD card.

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II. Updating the stitching box

To enjoy the best experience using our product, we recommend you to keep the Orah camera and stitching box up to date.

Updates will install new features and corrections.

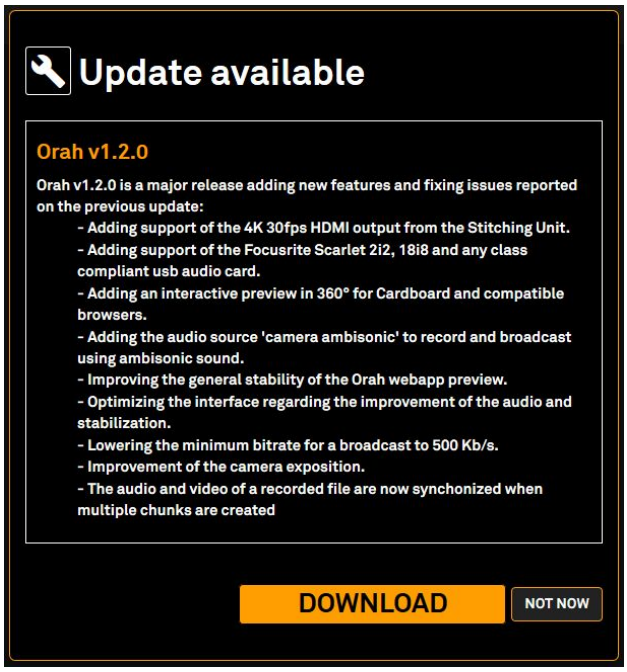
If the stitching box is connected to the internet and a new firmware version is available, a notification will appear in the web control application.

Note : You need to be connected to the internet to be notified of updates.

If you launch the update, you will be redirected to an instruction page to download and install the new firmware.
If you select the "not now" option, no update will happen and you will be redirected to the web control application home screen.

1. Update via the "Update Pop up"

Click on DOWNLOAD to open a new web page and discover the changes available and proceed with the download. If you do not want to download at this time select NOT NOW.



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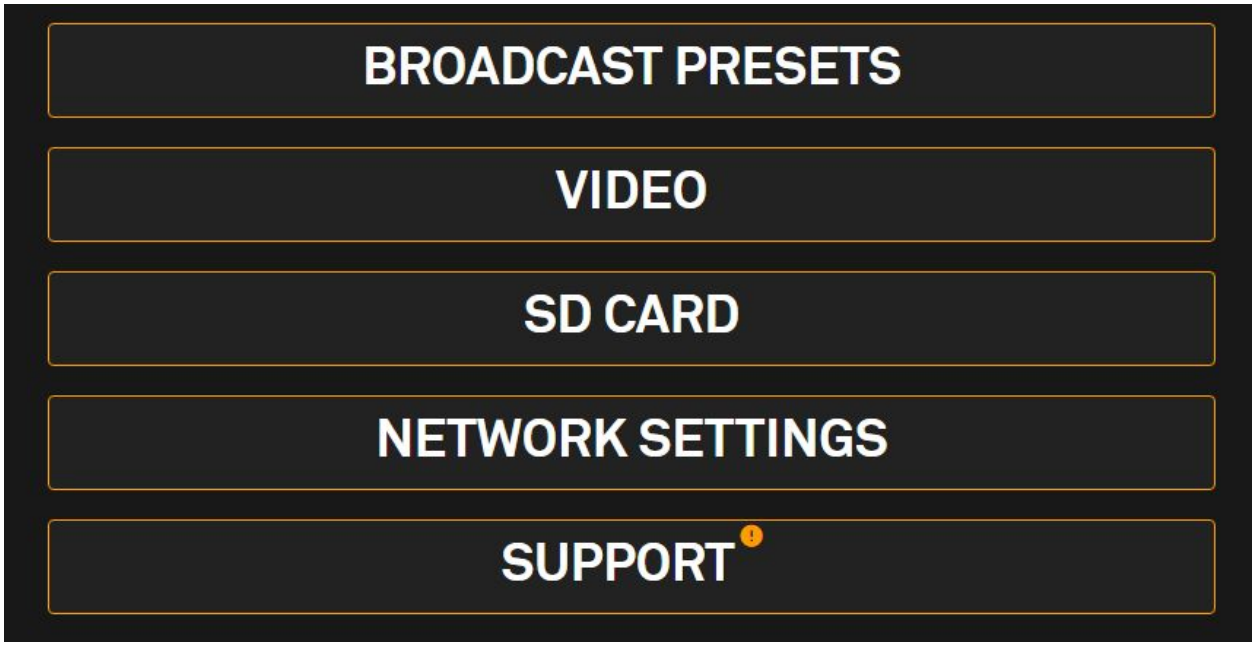
2. Update via the support page

If you select ‘not now’, an update notification icon will remain available in the web control application interface next to the settings button.

- Click the "Settings", then on "Support".



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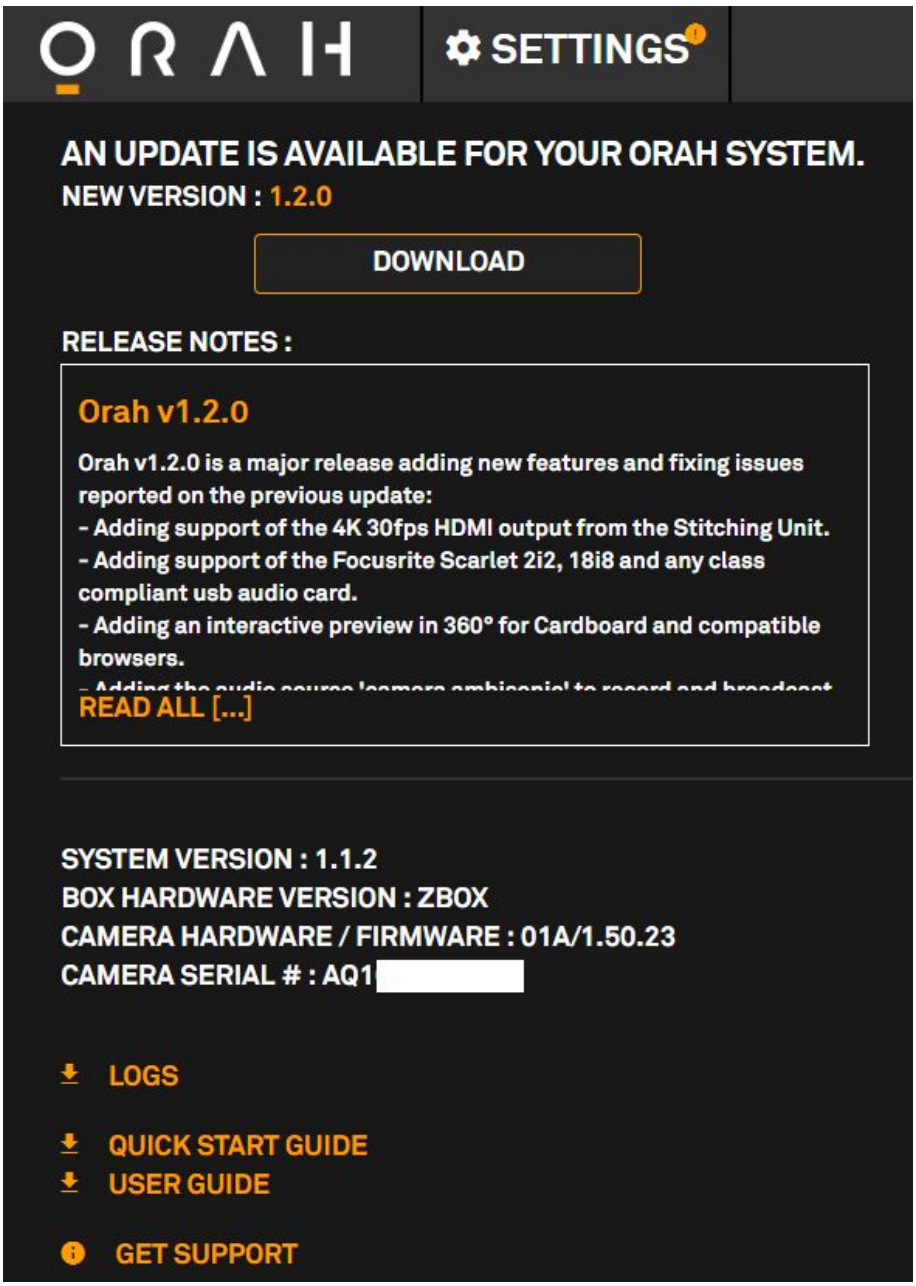
- On this page, you can review the release notes for the new version.



Simply click on the "download update" button to access the download page and get the instructions to proceed.

Just follow the steps to download the new update for the stitching box.

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3. Updating the Orah 4i system

Prerequisite :

- You will need a USB key Fat32 formatted with at least 1GB of available space.
- You will need the latest firmware. It can be downloaded here
- Your Orah 4i stitching box is turned off, the camera is disconnected from the box, and Orah 4i web app is closed

1. Copy and unzip the downloaded firmware to the root of your USB key

Make sure that you do not have other Orah firmware files copied on the same USB key

2. Plug the USB key to one of the USB 2.0 ports of the stitching box

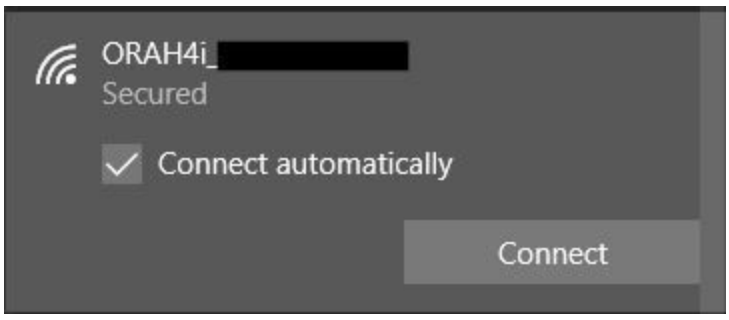
3. Turn the Orah 4i stitching box on

The system will automatically update itself from the USB key. Once the update is completed the system will reboot and you should hear a bip at the reboot.

Note: The complete update should take 2 to 3 mins.

4. Plug the camera to the stitching box

5. Connect to the wifi network of your Orah system



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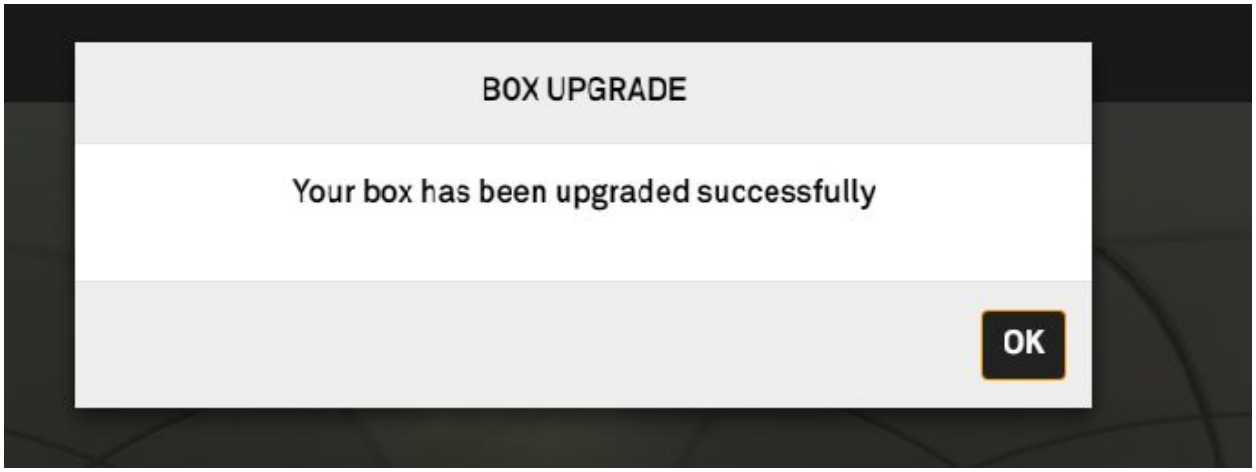
You can refer to the Orah Quick Start guide for more explanation

6. Connect to the Orah 4i web application

You can access the web application by connecting to 10.224.224.224 after connecting to your Orah 4i wifi network.

In the home screen, a pop-up will notify you of the successful update



You can also open your USB key, the firmware file will now be suffixed "done" after a successful update

If the firmware of your camera is not the latest one, you will see a notification in the web application prompting you to update the camera firmware. This update is done automatically through the web application.

4. Updating the Orah 4i camera

Any given version of the Stitching Box embed an approved and validated Camera firmware.

Each time the Orah 4i camera is connected to a stitching box, the stitching box will check the camera’s firmware (FW) version.

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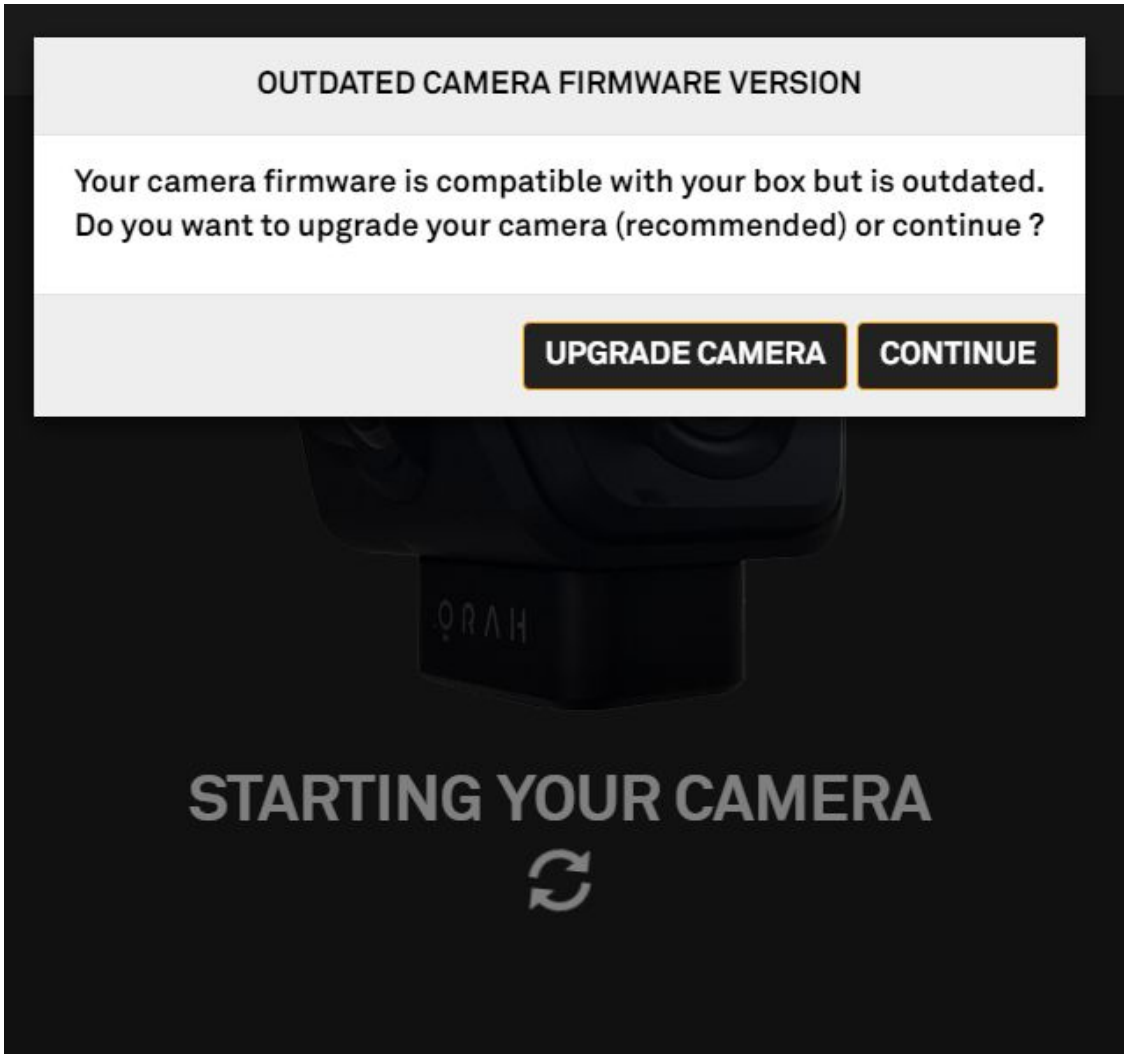
- If the Camera Firmware version is older than the Stitching Box, the system will detect it and suggest you to update the Camera firmware



If you own multiple Orah cameras, we recommend you keep them all updated to the latest available version by following the Camera Firmware update process.

If you just received your Orah 4i, after upgrading the stitching box, you will see the following :

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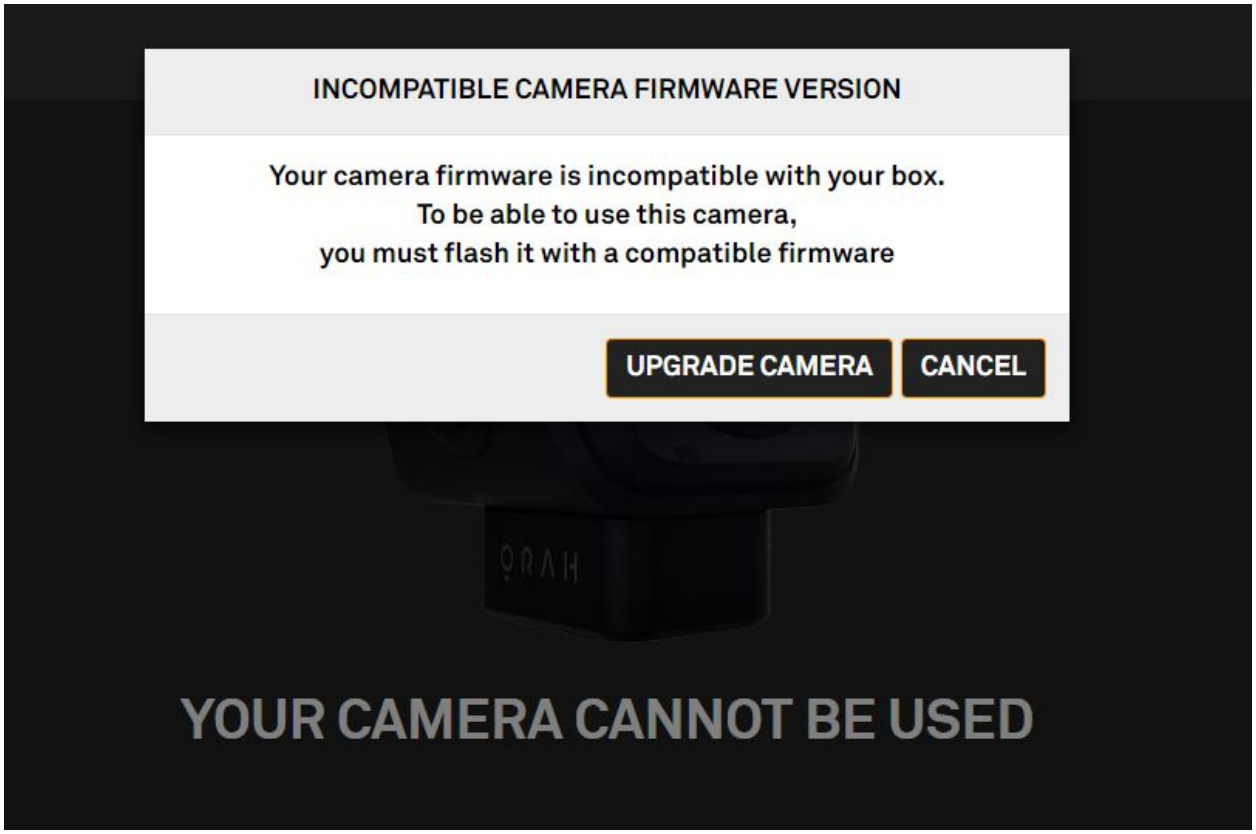

After upgrading the camera firmware, you will see the same message again and will need to upgrade once again.

After the update, the preview will load and you will be able to see your stitched panorama

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Home screen

The home screen gives you access to a live preview and the following configurations:

- Settings
- Broadcast
- Record to SD card
- Audio settings
- Live stabilization

The preview does buffer the stream to improve preview reliability inducing several seconds of delay.

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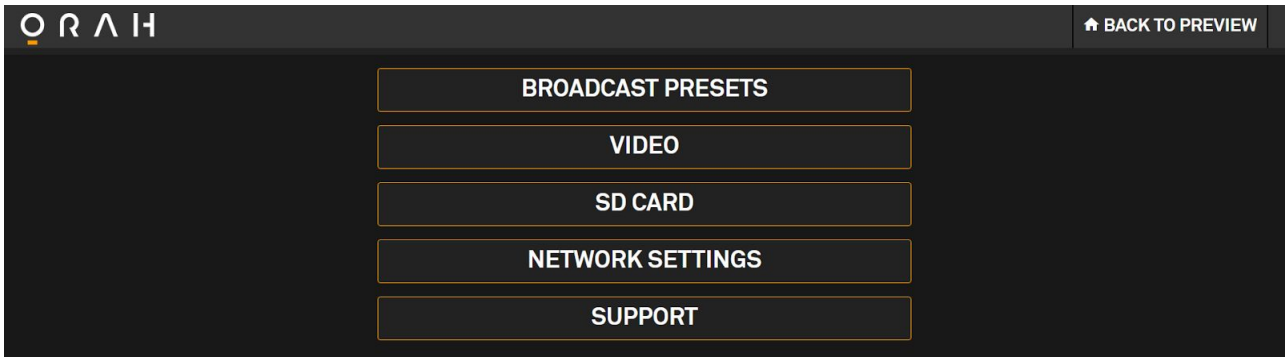
I. Settings

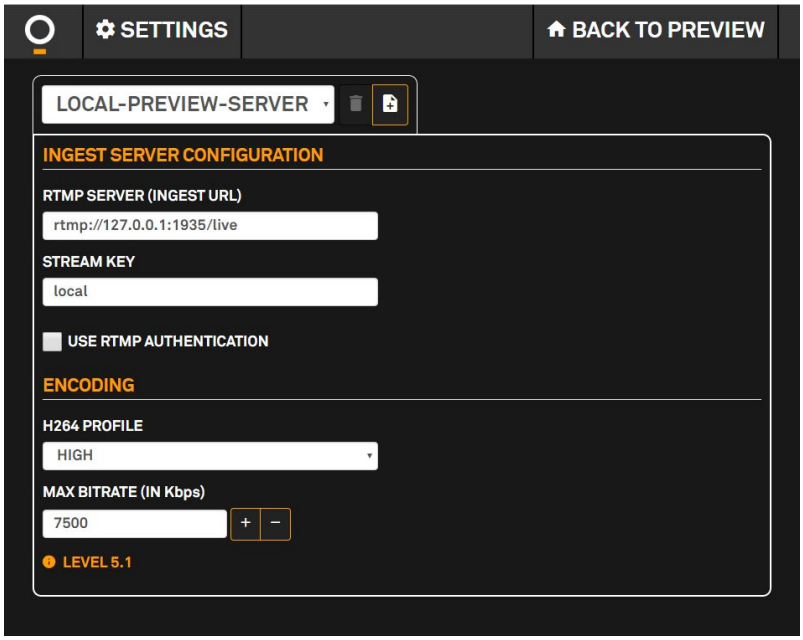
Clicking on the Settings button will give you access to a menu where you can configure and save your broadcast options (via the broadcast presets), configure the video, view the stitching box network details and access technical data for support (firmware versions, logs).



Clicking on “Back to preview” will send you back to the Home page.

1. Broadcast Presets

You can use the broadcast presets menu to edit the broadcasting parameters.



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You can choose an existing preset, delete the selected custom preset, or create a new one.

If you modify an existing preset, you will be able to update, save as a new preset or cancel. The default preset (local-preview-server) can not be deleted. This preset can be used to stream to the box internal server. For more detail you can see our tutorial:

http://support.orah.co/hc/en-us/articles/115000034264-How-to-setup-a-4K-preview

- **RTMP endpoint configuration**
  - Enter the correct RTMP server URL to broadcast the RTMP stream to. The system supports any service capable of ingesting RTMP.
  - Enter the stream key as configured on your server.

For more security when broadcasting, you can tick the “use RTMP authentication” box. The username and password to fill in in the RTMP configuration are those defined in your CDN configuration.

You can also change the encoding of the video you will stream.

- **Encoding** - to define how the video is compressed and streamed.
  - **H264 Profile**: to change the compression quality.
    - High (recommended)
    - main
    - baseline

    Generally **High** profile offers the most bandwidth efficient compression for streaming. **Main** and **Baseline** can be useful if you have specific device or server compatibility requirements. For more details about profiles : click here.

  - **Max Bitrate in Kbps**: the number of kilobits per second. This parameter defines the video compression. It affects the general quality of the image. The minimum is 2500 and the maximum is 50000. YouTube’s recommendation for 4k streamed video is between 13000 Kbps - 30000 Kbps. Do not exceed the upload bandwidth of your internet connection, to avoid packet losses during the upload.

The level is the result of the resolution, H264 profile and the bitrate.

Save your changes to a new profile or update one of your existing profiles.

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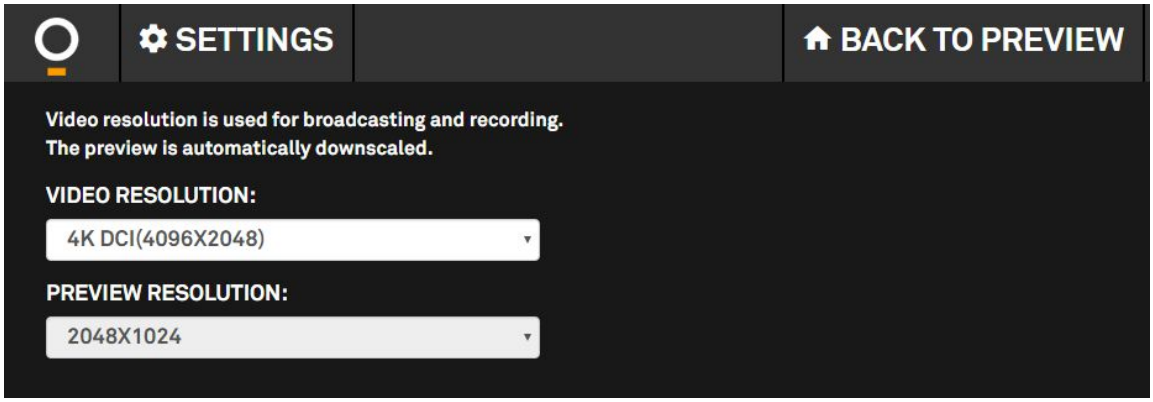
2. Video

In this section you can change the **video resolution,**



Please note, that is not possible to change the video resolution while broadcasting nor recording.

There are five available resolution options:

- 4K DCI - 4096x2048
- 4K UHD - 3840x1920
- 2.8K - 2880x1440
- 2K - 2048x1024
- HD - 1920x960

Currently the **preview resolution** is set to 1/4 of the broadcast resolution and encoded as Baseline 4.0, 5 Mbps to ensure it plays smoothly on a wide range of devices.

3. SD Card

Please note we recommend to use class 10 SD card with at least 10 Mbp/s. We tested some references you can find by clicking on the link below:
[link to the FAQ]
This list is non exhaustive and that does not mean that your card won't work.

Note: The SD card needs to be reversed to be plugged on the Stitching Unit.

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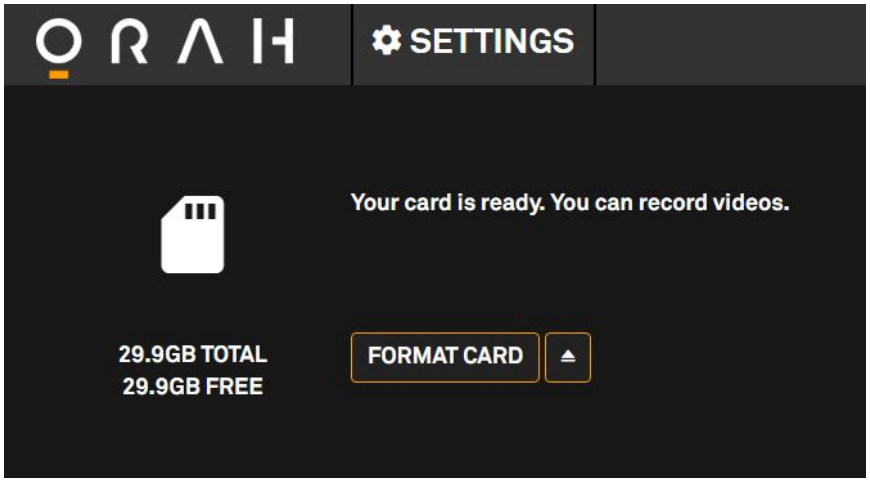
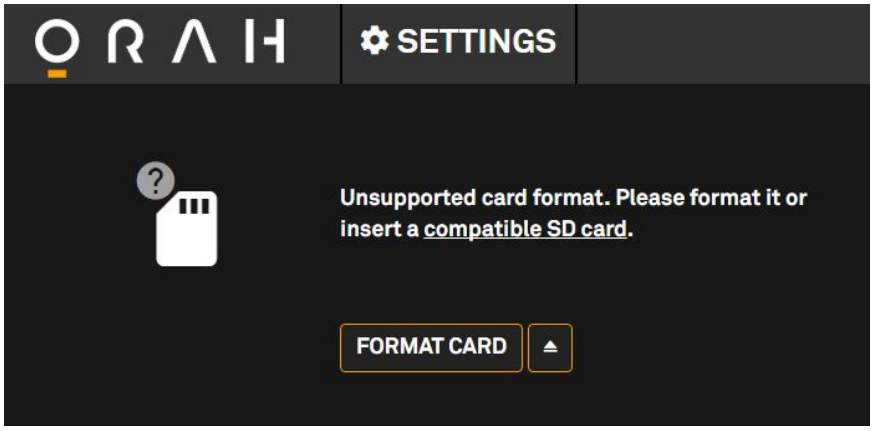
When you insert a SD card, the Stitching Unite checks it. If everything is fine, the message below appears.



If the card is not compatible, the message below appears. In this case, the formatting is necessary to use the card.



Please note the formatting of the card erases all the content of the card - this action is irredeemable.

After clicking on "format card" a validation window displays. The user has to click on "yes, format" to initiate the formating of the card.

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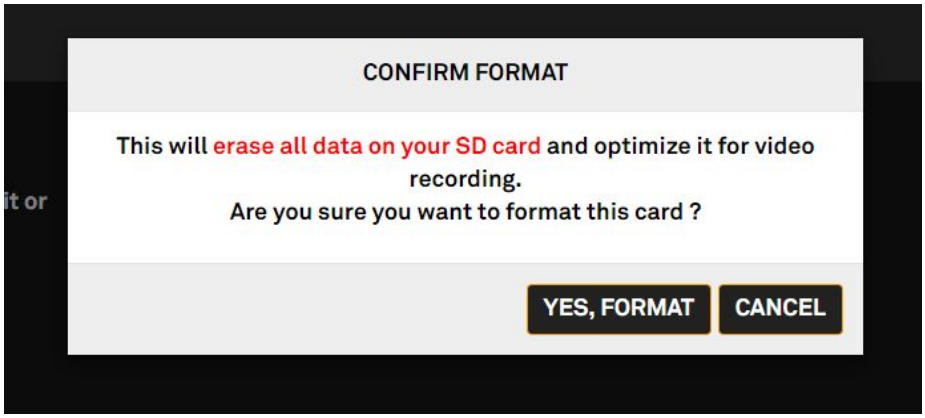
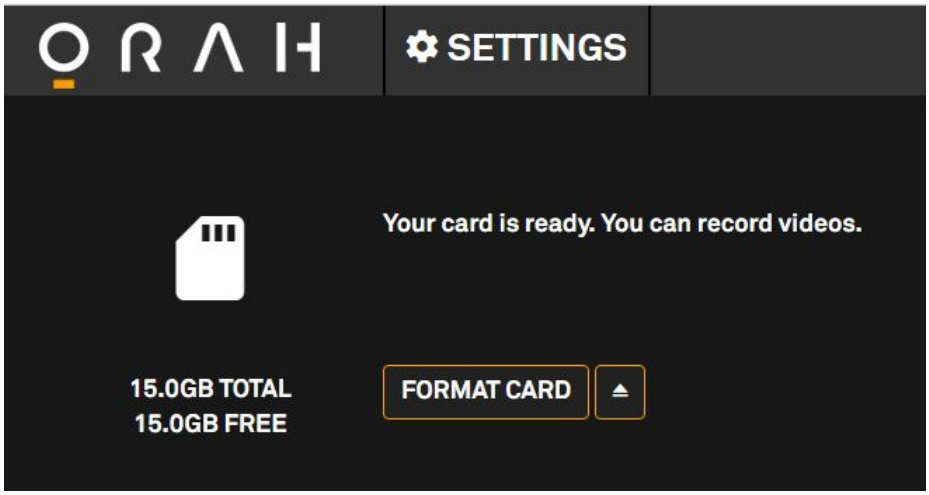


After few seconds - the length of this operation depends on the performance of the SD card - the card is ready to use.



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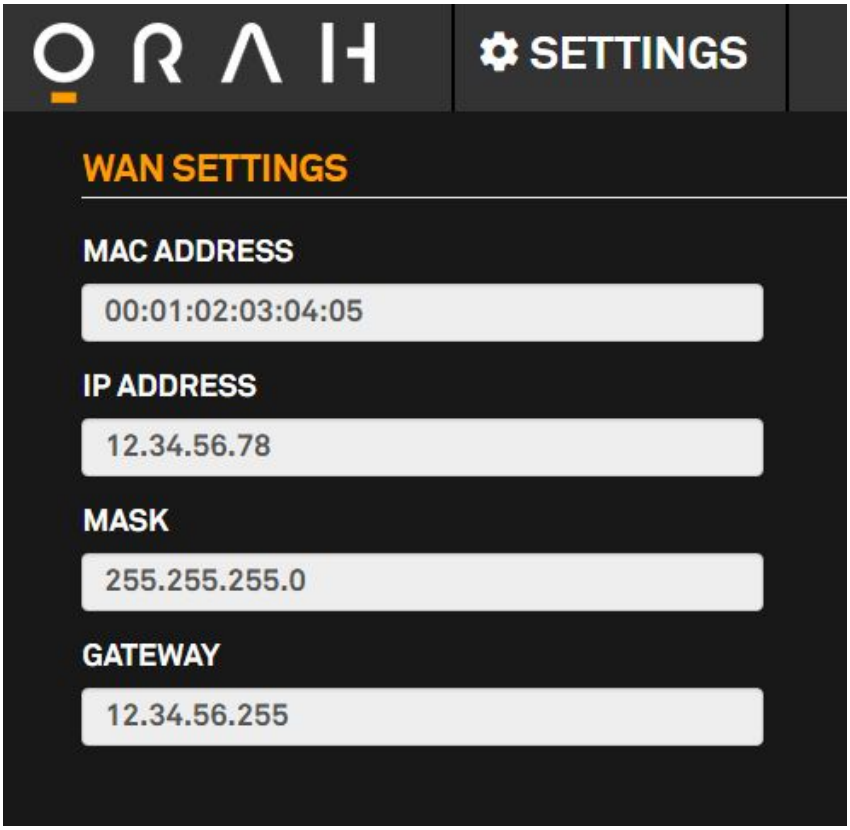
Please note that the card will be formats in FAT32 with the optimum cluster size. **We recommend to the user the formating of the SD card via this process.**

4. Network Settings

Access the **WAN Settings:**



- Mac address - unique identifier assigned to network interfaces for communication at the data link layer of a network segment. The MAC address may be needed by the network administrator to allow the Stitching Box to connect on the network.
- IP address - a numerical label assigned to each device of an Internet Protocol network, allowing to find and reach it.
- Mask - bit mask defining which part of an IP address is targeting the network and which is targeting hosts.
- Gateway - allows to communicate with another network.

If IP Address, Mask, and Gateway boxes are blank then check the physical connections between the Stitching Box and the DHCP server. Ensure the DHCP server is configured correctly. Without information here the Stitching Box will not be able to broadcast a live stream.

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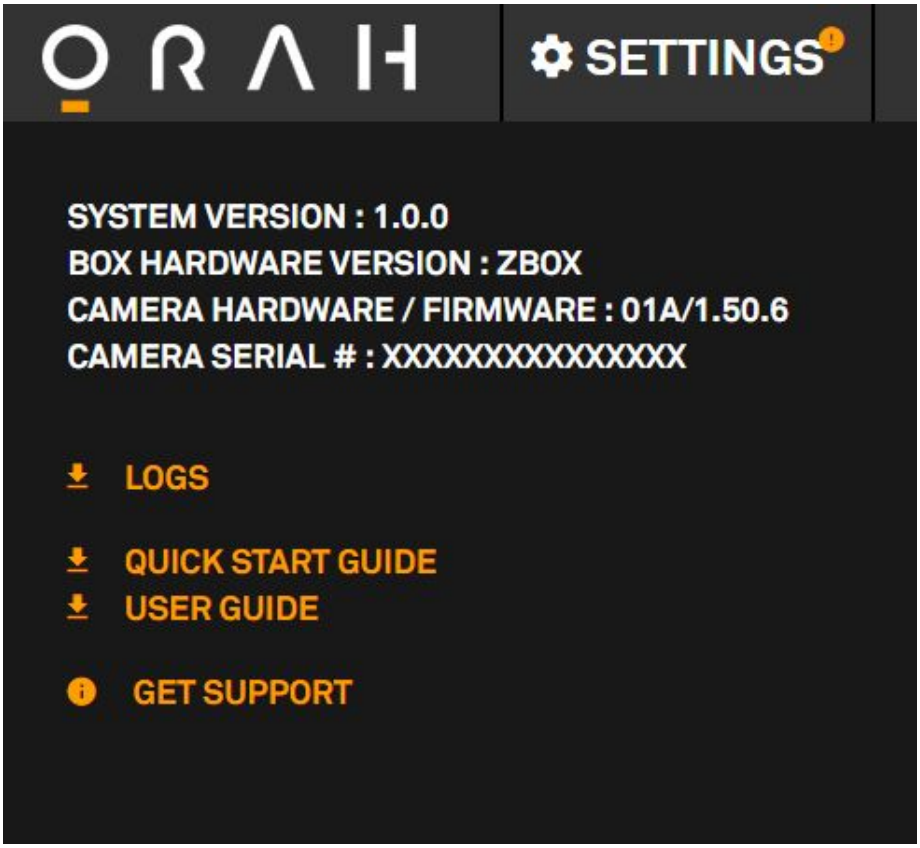
5. Support

Displays technical information on your system necessary for any exchange with our support team.



You will also find your system technical details (stitching box firmware version, camera hardware and firmware version and camera serial number). Camera information will only be displayed if the camera is connected to the stitching box.

Such information is required when contacting the support.

If a firmware update is available, you will also be able to download it from this screen.

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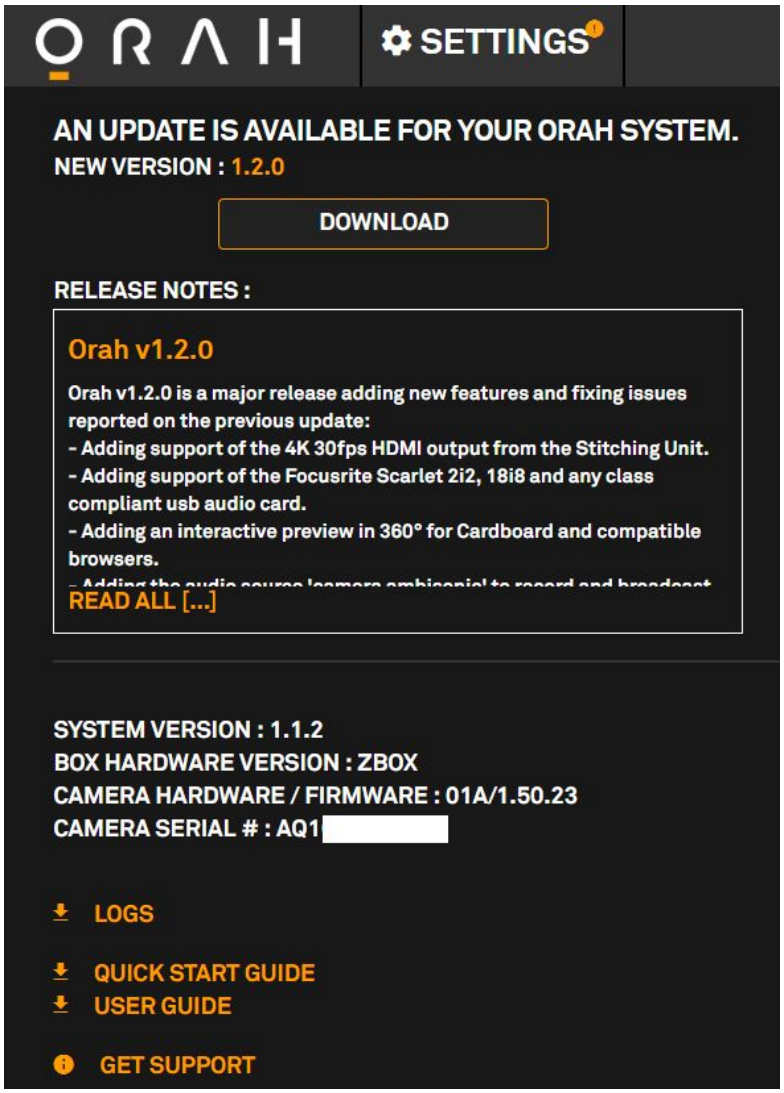

At the bottom section of the support page you can download the logs, documentation and visit our online knowledge base.

- Logs: Click on the “logs” do download them. Please make sure to attach the logs file to your support request if you encounter any trouble using the stitching box or the camera. Note that this package is for the use of our support only, you won’t able to open it.
- Quick Start Guide: By clicking on this link, you will be able to access and download the Orah "Quick Start Guide".
- User Guide : By clicking on this link, you will be able to access and download the full Orah 4i user guide
- Get Support: This will redirect you to the Orah knowledge base where you can access tutorials, answers to frequently asked questions, solutions to common problems and documentation about Orah 4i features.

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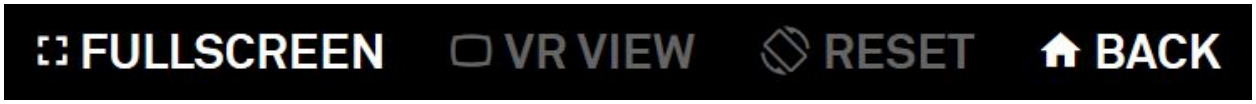
II. VR Browser

Orah 4i control app let's you live preview the scene it is capturing either flat, with a traditional 360 video interactive view, or even directly in HMD's (Head Mounted Displays).

Interactive preview, and HMD preview enable you to preview the scene exactly as the end user will experience it. You should use it every time it's possible to adjust the camera positioning.

The default video preview is a flat equirectangular projection. To access interactive and VR preview, click on the HMD icon.

This will open a dedicated window with the interactive preview player.



- Full Screen: To display the VR browser view in fullscreen. To leave the full screen view press “esc”.
- VR View: To display a Side to Side view for the Cardboards.
- Reset: To reset the horizon while using a cardboard or a HMD.
- Back: To close the VR Browser and open the classic equirectangular preview.

1.HMD Preview

Orah 4i's HMD preview leverages the WebVR API which provides in browser HMD support. When the WebVR API is not available in a mobile browser, Orah falls back automatically to a 'cardboard' type of preview.

If your browser supports the WebVR API, or if your are using a smartphone, the 'VR preview' will be enabled and let you toggle the HMD preview mode.

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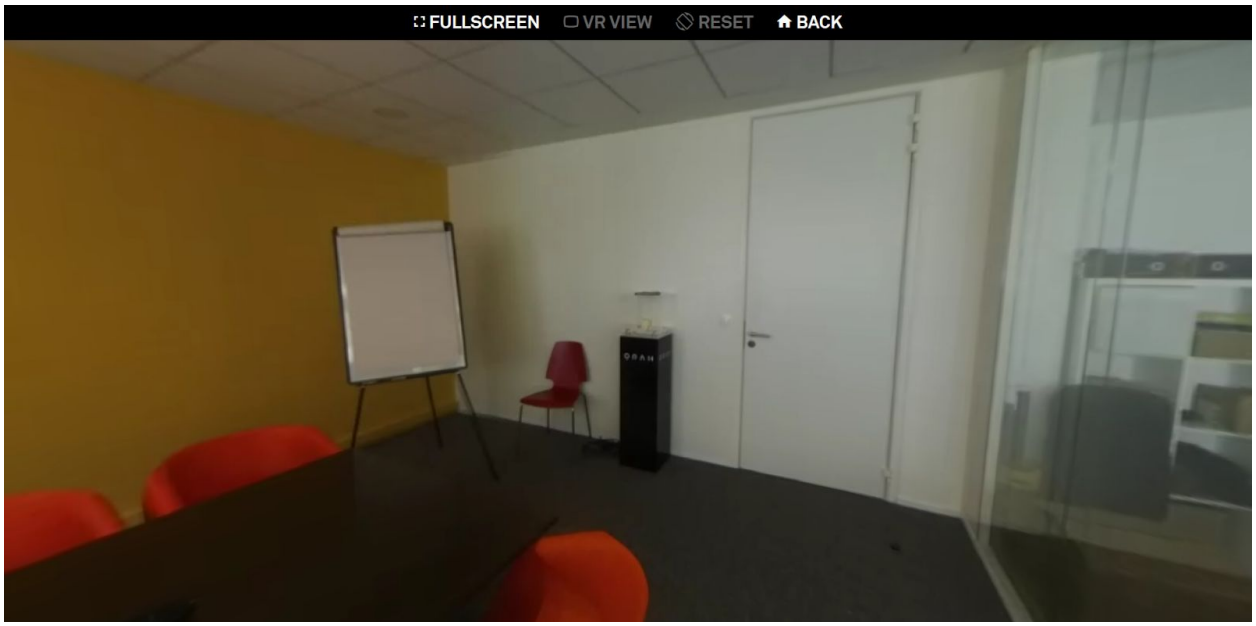

If your web browser doesn't support the WebVR API, or if no HMD was detected, the 'VR preview' button will be disabled.

For an up to date view of the various HMD devices in each browser, make sure to check out : https://webvr.rocks/

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Audio

I. Audio sources

By clicking on the “Audio” button on the bottom left of the interface, the audio settings display. It can take 3 to 5 seconds for the modifications to be applied. This is due to the streaming protocol we are using (HLS).

- There is two ways to capture the sound from the camera: stereo and ambisonic.
    - Stereo: The preview, the broadcast and the record are in stereo.

    - Ambisonic: The VR preview, the broadcast and the record are in ambisonic sound.

Please note that the equirectangular preview is always in stereo, no matter which audio source is selected.

When the camera source is selected, the gain slider displays. The gain permits to change the sensibility of the microphone (the value ranges from -12 to +67.5).
The higher the gain, the more sensitive the microphones.

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Using line-In (stereo): You can connect an external microphone or a smartphone/tablet/mp3 on the box via the frontal jack 3.5.

Note: The sound may not be synchronized with the video. To reach a perfect synchronization, you can tweak the delay slider(value ranging from -1sec to +1sec).
If the sound comes later than the video, you should decrease the delay value and vice versa.

II. External USB Cards

Orah v1.2.0 release adds support for professional USB audio cards.

We currently support two cards: Focusrite Scarlett 2i2 et Scarlette 18i8.

We will list supported cards as we collect feedback. Any USB audio class compliant device is expected to detected and work similarly. If you have a different USB audio card, we encourage you to test it and tell us about it.

1.Using USB audio cards

Hot plugging / unplugging of the card is not supported :

- USB audio card must be plugged in before boot in order to be detected
- USB audio card must not be removed while Orah 4i is running
- Multiple USB audio cards can not be used simultaneously

When the audio card is detected, it will appear as an audio source in the audio settings.

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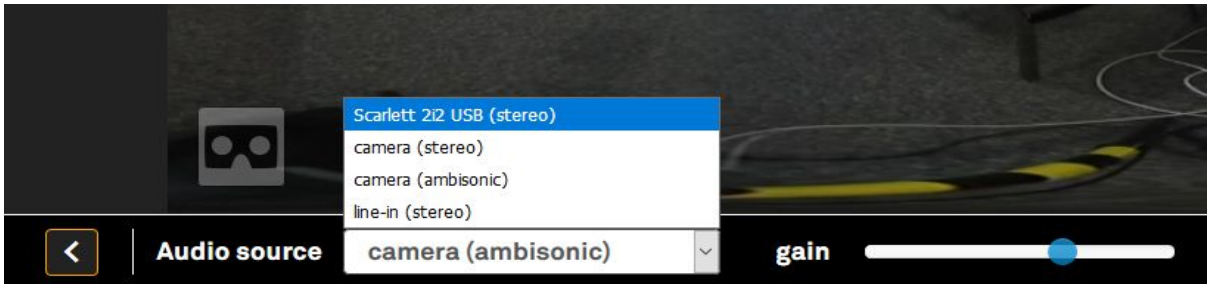

When the audio card is selected, it is used as audio source for preview, broadcasting and recording.

2. Channel layout

a.Mono

Mono channel layout is not supported.

b.Stereo

When selecting stereo audio, the first two channels of your USB audio card will be used as Left and Right channels.

c.First order ambisonic (4 channels)

USB audio cards providing at least 4 channels of audio will be listed with an option to ingest ambisonic. When ambisonic is selected, the first 4 audio channels of you device will be used as audio source for audio passthrough.

The expected audio signal should be in AmbiX format: ACN channel layout & SN3D normalization.

See also : Ambisonic audio

Note : the provided ambisonic audio signal should be aligned with the video. Orientation adjustments and stabilization applied to the video, are not applied to the audio soundfield.

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Ambisonic audio

Orah 4i can capture ambient audio in first order (4 channels) ambisonic, thanks to it's advanced audio processing and specifically positioned microphones.

It delivers spatial audio in AmbiX format (ACN channel layout and SN3D normalization).

I.Spatial audio preview in the browser

Spatial audio can be previewed in the control app using the VR preview. It is enabled automatically when you configure Orah 4i with an ambisonic audio source.

Note: Ambisonic playback will fail on iPhones and iPads, as iOS does not currently support HLS preview with 4 channels of audio. Internet Explorer 11 does not support Ambisonic neither.
In those cases an icon is displayed on the upper-right of the Orah Webapp.

II. Ambisonic recording

The recorded MP4 files embed spatial media metadata for spatial audio playback on platforms that support it, such as Youtube and Facebook.

The metadatas provide the description of the ambisonic format for these platforms to playback the audio accurately.

III. Ambisonic broadcasting

Orah 4i is also capable of broadcasting spatial audio. The broadcasted stream will yield 4 channels of AmbiX formatted audio.
In the case of ambisonic audio broadcasting, no metadata are passed to configure the player or CDN.

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Orientation

I. Stabilization

Ticking the “camera in motion” box keeps the image straight and aligned with the horizon.
The stabilization process can also be used to avoid crooked horizon if the camera is shaking (during a movement).

You can also feel the need of putting the camera in place upside-down. In this case, once the installation is done, you can tick the “camera in motion” to level the image of the camera.

You can also rotate the view of the camera manually using the Yaw, Pitch and Roll value.
Add a value between -359 to 359 and click on the “rotate” button to apply it.
It is possible to reset the value pressing the reset button.

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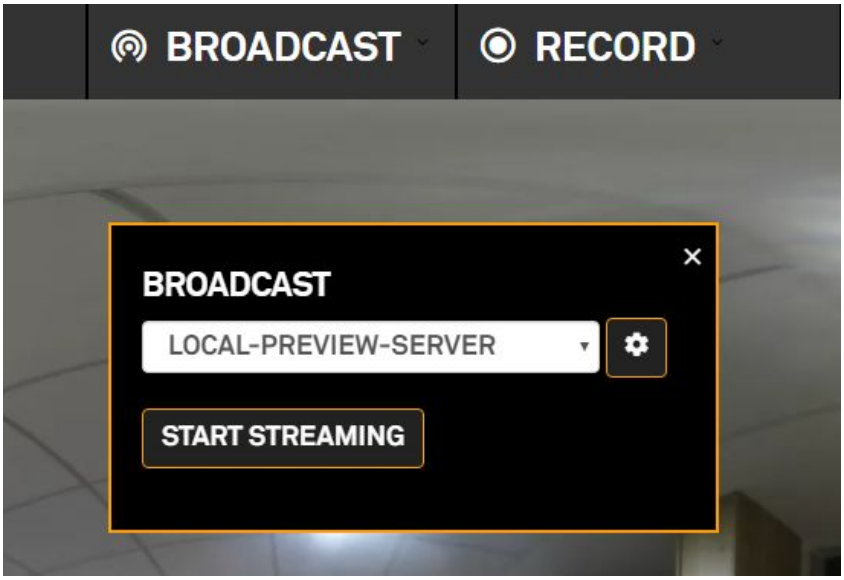
Broadcast

Broadcast option is available straight from the homescreen. Pressing this button opens a broadcast box.



Choose from one of the created profiles. Click the cog to view or modify the profile. Refer to this page for more information about this section.

Click “start streaming” to publish the panoramic video to the selected preset. Once the streaming has started it must be stopped to make any change to the preset (framerate, resolution…).

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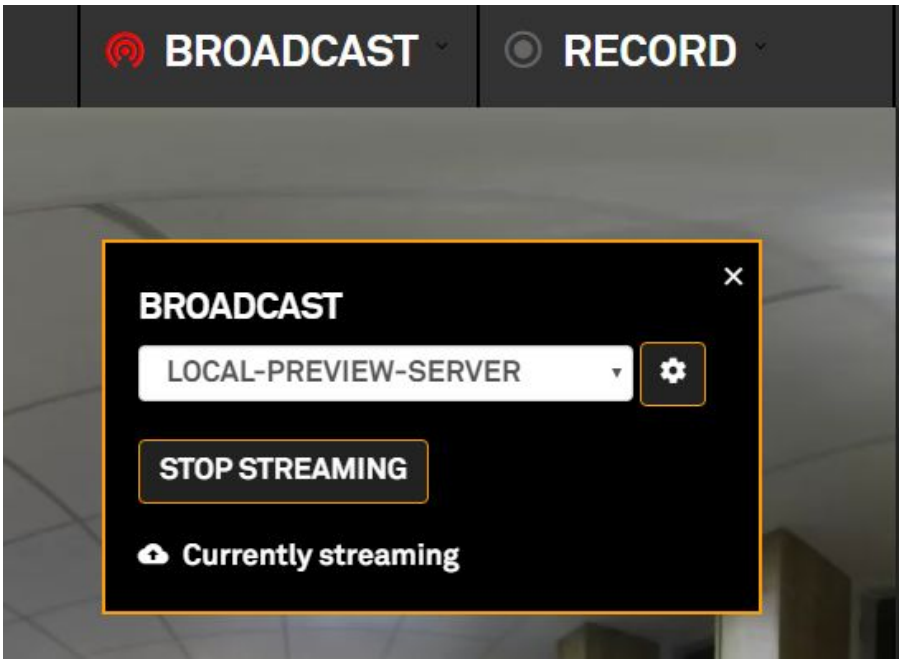

I. How to setup a live broadcast

You can access our dedicated YouTube and Wowza tutorials through the link below:

1. Broadcast to YouTube

http://support.orah.co/hc/en-us/articles/206497084-How-to-stream-to-YouTube-using-the-Orah-4i

2. Broadcast to Wowza

http://support.orah.co/hc/en-us/articles/207316010-How-to-live-stream-with-the-Orah-4i-and-Wowza

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II. Using the preview streams in a third party player

- There are some 360° video players for PC and smartphone that can play the streams interactively.
- An example of this is SpherePlay available for Android and iOS.
    - Connect to your Stitching Box using WiFi
    - From the menu **…**, choose **Open URL**
    - Enter http://{box-ip}/hls/preview/index.m3u8 or http://myorah4i.orah.co/hls/preview/index.m3u8 (please note that the box IP can be found in the network settings)
    - Select projection, choose Sphere
    - Hold your phone level in landscape mode and double tap to set the orientation.
    - Pan and zoom to inspect the video to ensure the camera is placed in the ideal location.

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Record to SD card

I. Recommended cards

We recommend using Class 10, U3 SD Card (UHS-I, UHS-II, UHS-III).

You can find below a list of cards known to work well with the system:

- Lexar 1000x 32GB
- Lexar 633x 16GB
- Sony SF-M32 32GB
- Samsung Pro+ 64GB
- SanDisk Extreme Pro 128GB

II. Recording to SD card

The content of the record button (on the left of the broadcast button) may changed depending on the SD card plugged by the user.

Please note by clicking on the button, the user can have more informations about the errors. An error can occur with an incompatible card for instance (NTFS or exFAT format...).

In each case, this error can be corrected by formating the card using in the SD card settings. Simply click on the button "SD CARD" to reach the dedicated menu.

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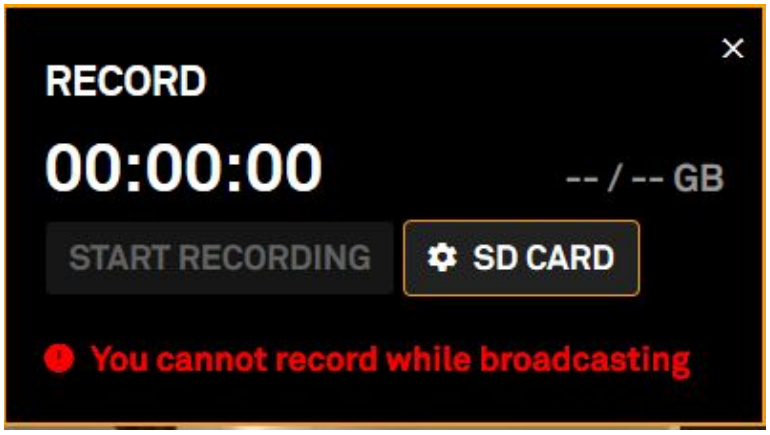
- It is not possible to broadcast and record in the same time.



- If no card is inserted, the button will turns into "Insert SD" state.

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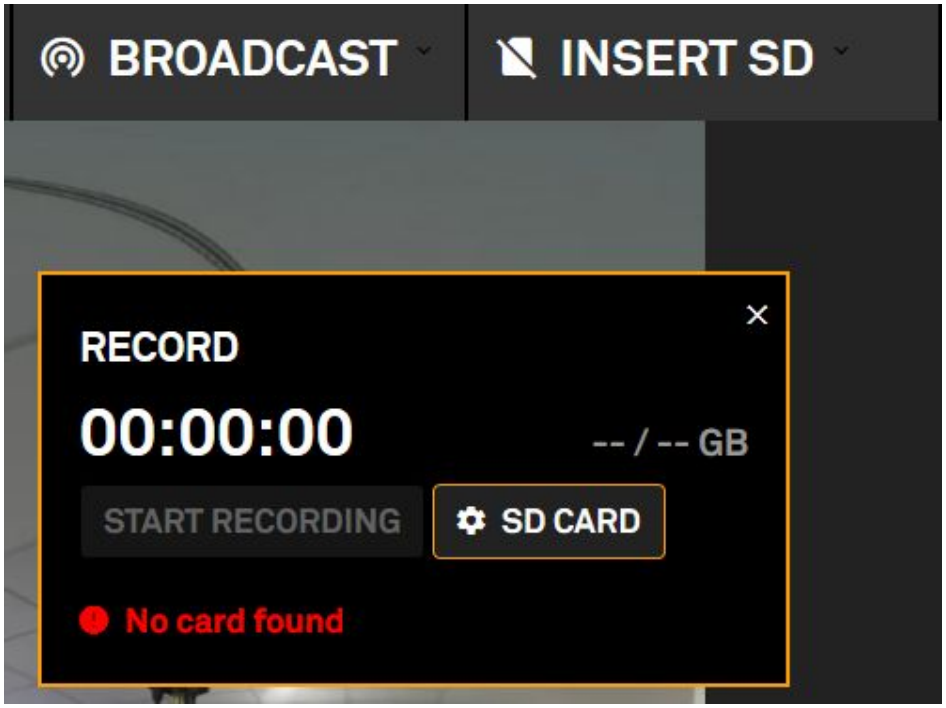
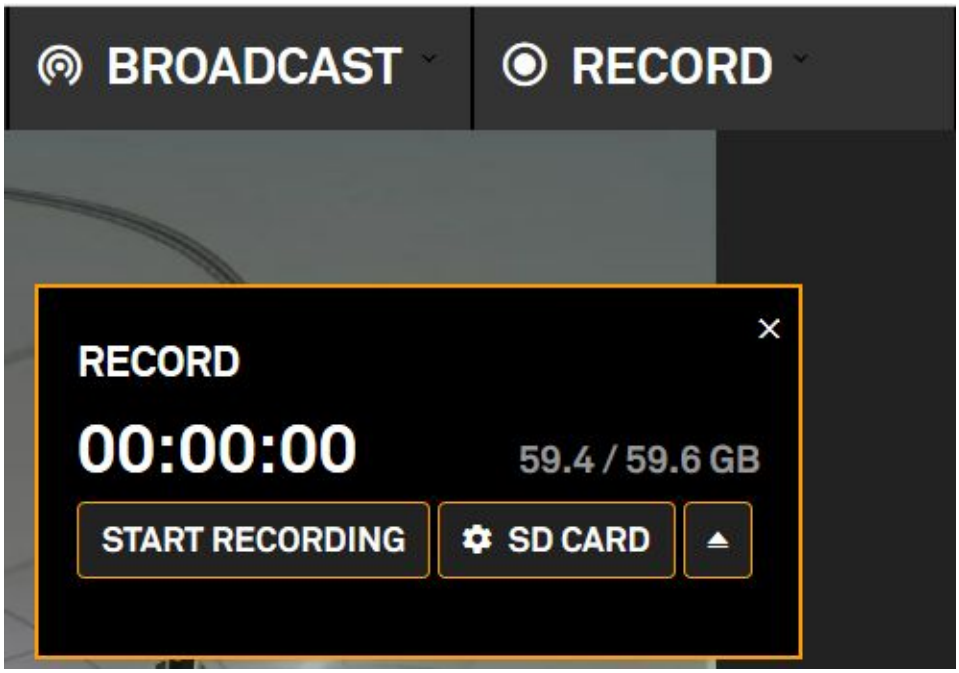


- If a compatible card is inserted, the button will turns into "Record" state.



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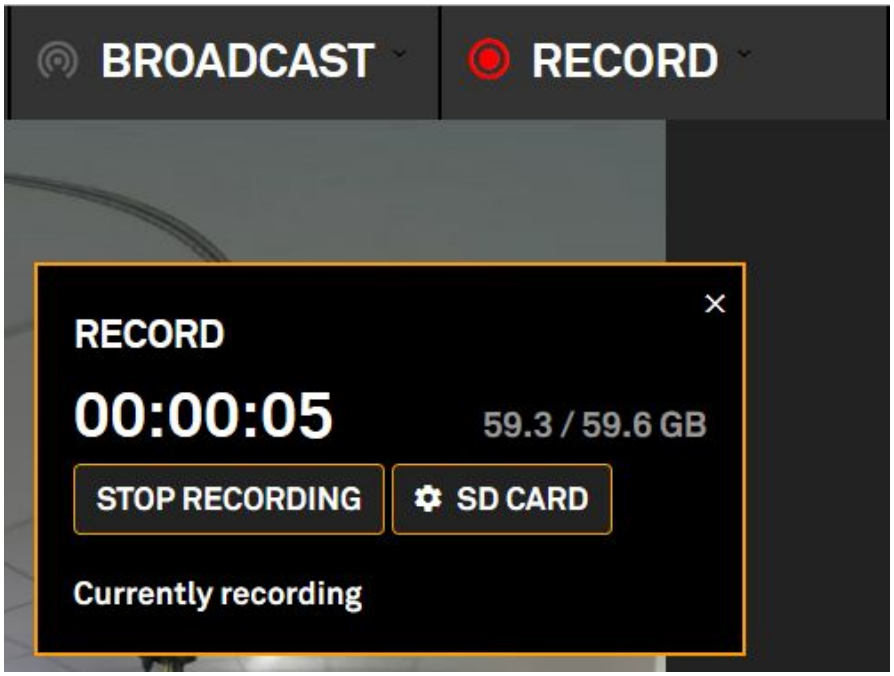
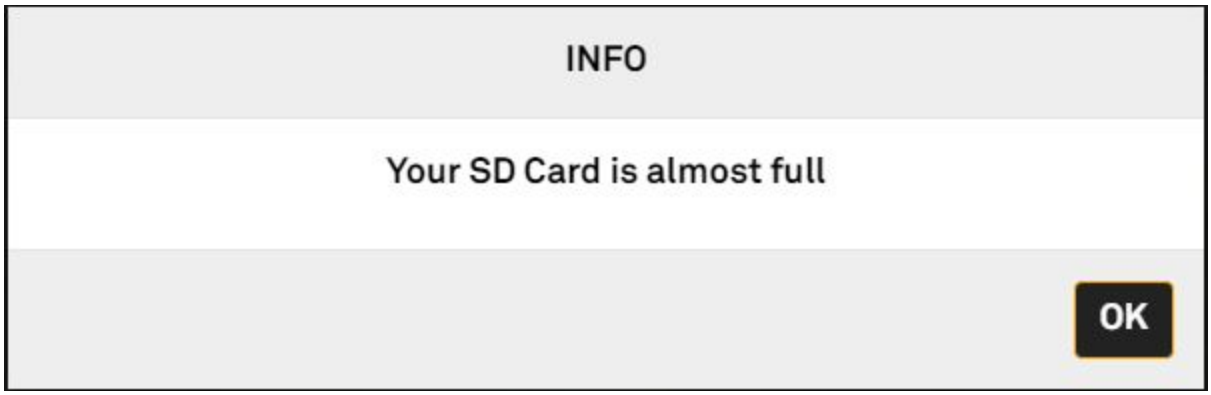
- In the record state, it is possible to launch a record. Click on “start recording” to begin the record. To stop it, simply click on “stop recording”.



- When your SD card is nearly full, a warning will be displayed



- The Recording will stop when the card is full

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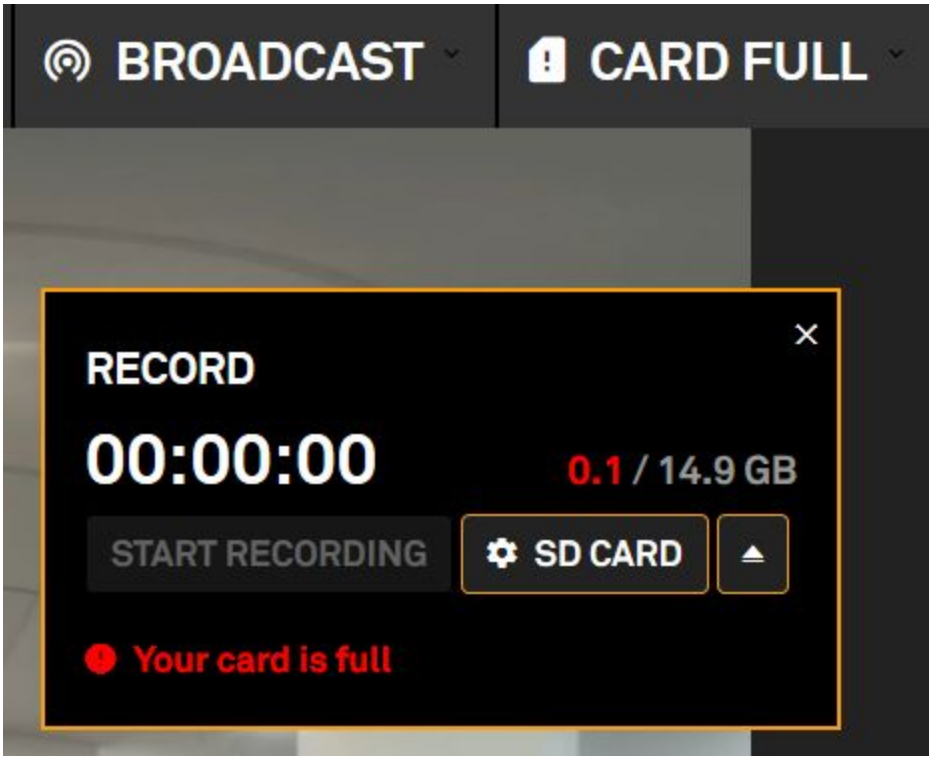

Please note that you should not unplug the card during a record and eject it via the dedicated button

- If an incompatible card is inserted the button will turns into "SD error" state.

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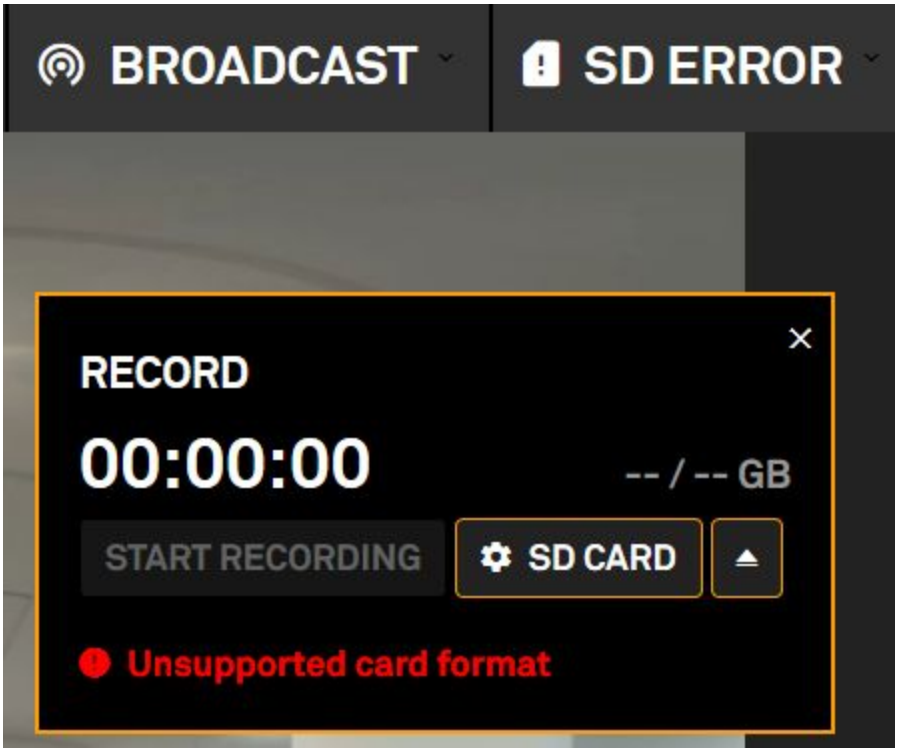
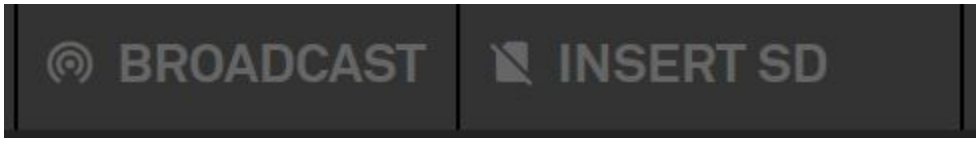


- If no card and no camera is plugged or inserted, the button is grey over. It won't be clickable.



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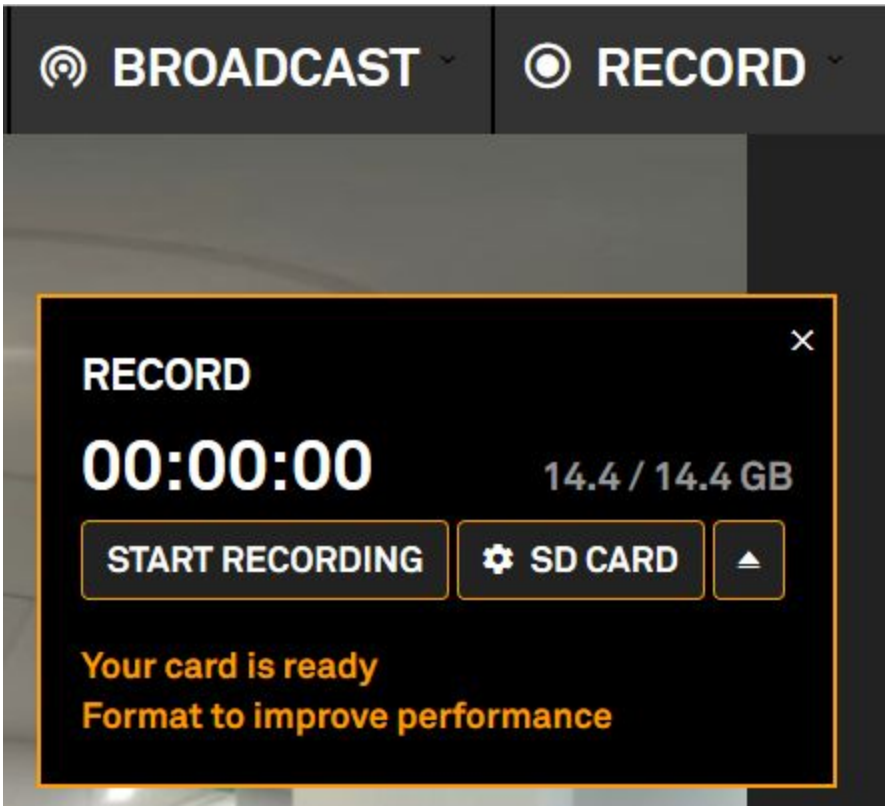
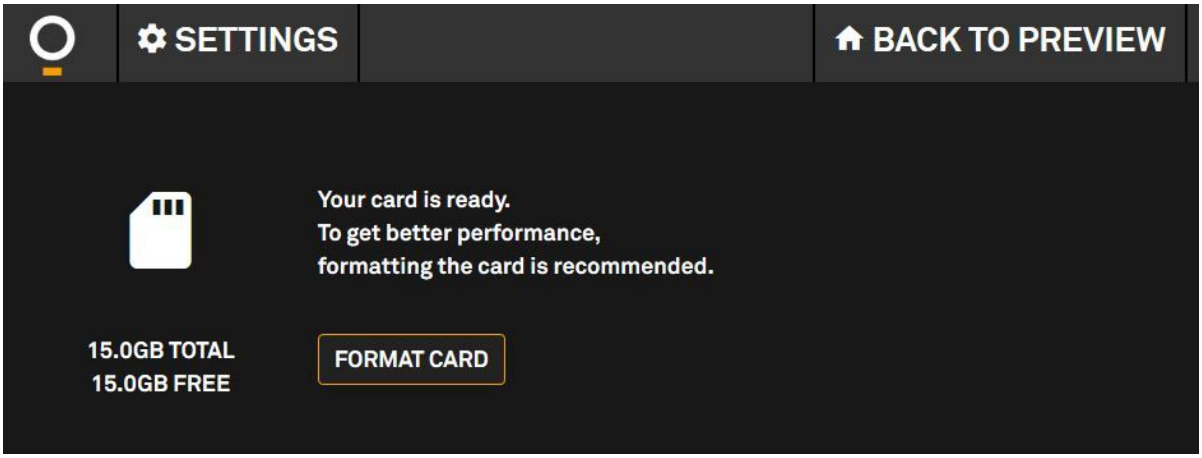
- Formatting the card can also improve the performances of the SD card. In this case, an orange message will be displayed.





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HDMI output

I. Using the HDMI video output

The aspect ratio is 16:9 with a resolution up to 4096x2160p. The framerate is up to 30fps.

- Your HDMI device should be plugged in before you power up the stitching unit.
- Using multiple HDMI ports at the same time is currently not supported.

II. HDMI resolution and framerate

The maximum HDMI output resolution you will get is bound to the configured video mode.

Orah 4i delivers video signal over the stitching unit HDMI 2.0 with supports HDMI 4096x2160 resolution at 30fps and above.

The actual Orah 4i output resolution depends on capabilities of the sink HDMI device you plug to it. Please refer to your third party equipment to check on supported resolutions and framerates.

For optimal resolution on the HDMI port, we recommend configuring Orah's video mode to 4K DCI (4096x2048).

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III. Using Orah 4i HDMI output with Blackmagic Design Decklink and ATEM equipment

When plugging Orah 4i to a Blackmagic design ATEM switch, you need to plug the HDMI cable on the switch after it has been connected to Orah 4i HDMI output. You may need to reboot unplug and replug the HDMI cable on the ATEM switch for the video to display.

Please note that most Blackmagic design equipment will not display any video signal unless they are configured at the correct resolution and framerate.

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Troubleshooting

I. Reporting bugs related to the camera

Before reporting a bug related to the detection of the camera on the Orah WebApp, please follow this article.

Before reporting a bug related to the update of the camera, please follow this article.

II. Reporting bugs related to USB audio card support

Before reporting a problem related to USB audio ingest:

- Make sure whether the card is listed when you re-open Orah 4i's control app in a fresh browser window.
- Try to reboot to see if the issue occurs.
- Try the card on a different USB port. Make sure no other device is connected on the USB ports.

When looking for support on USB audio ingest, please send us the following information:

- The exact reference of the USB card you are having issues with.
- The logs collected right after the issue occurs.
- A sample file that we can use to analyze the audio signal if the issue is related to audio quality (eg. recorded to SD card).

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III. Reporting bugs related to HDMI video output

I. Before reporting a problem related to HDMI output :

- Make sure your cable is working correctly and no dust is causing electrical interference.
- Make sure your cable is suitable for 4K resolutions if you are trying to get 4K video signal through HDMI.
- Check whether the video signal displays when using another device.
- Check whether the video signal displays when using another HDMI port on Orah 4i's stitching unit.

When reporting issues related to HDMI video signal, please try to provide as much information as possible, especially :

- Send us the reference of the device are trying to use Orah 4i with.
- If you report a visible artifact, send us a picture or short video showing the artifact.
- Send us the logs collected from the support page of Orah 4i control web app right after the issue occurred.

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Getting support

For any question you can contact our support team at
→ http://support.orah.co/hc/en-us/requests/new

Make sure you provide the camera and stitching box versions and attach your log files.

Supported browsers

The Orah WebApp uses modern web standards to give the best experience for our customer. Please make sure you browser is up to date and has javascript enabled, here is the list of compatibility:

Windows 10: Google Chrome, Mozilla Firefox and Edge
Mac (El capitan and Sierra): Google Chrome and Mozilla Firefox
Android: Google chrome and Mozilla Firefox
Ios: Safari, Google Chrome and Mozilla Firefox

If you don't know the browser you are using, you can find out at whatbrowser.org.
Please note that the list is not exhaustive.

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