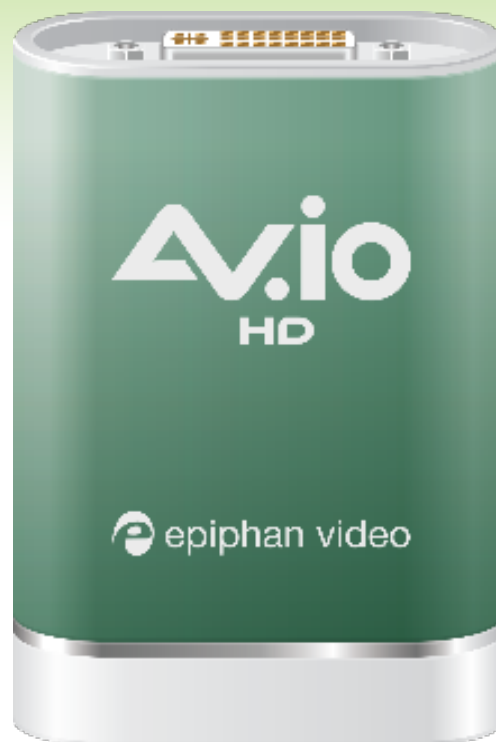


Epiphan AV.io HD



Release 1.0.13
October 14, 2015

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Specifications

Go to the [USB Video Grabbers](#) page of the Epiphan Video website to get the most recent product specifications and additional information about AV.io HD.

Warranty

All Epiphan Video products are provided with a 100% return to depot warranty for one year from the date of purchase.

Technical support

Epiphan's products are backed by our professional support team. If you are having issues with your product, please gather details about your system and contact our team by:

- E-mailing support@epiphan.com
- Live chat via the link on our [support site](#)
- Phone toll free at 1-877-599-6581 or call +1 613-599-6581

Be sure to include as much information about your problem as possible, including:

- Problem description •
- Details of the video or audio source (type, resolution, refresh rate, etc.)
- Product serial number
- Your operating system and version number

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Firmware 1.0.13 release notes

Firmware 1.0.13 is a modest bug fix release that offers an improved video capture rate as well as a new online format for the AV.io HD user guide.

What's new

This section provides details on the main features in firmware release 1.0.13.

Improved rate adjustment

AV.io HD now offers enhanced video capture in the form of smoothed frame rate adjustment when capturing at a rate (e.g. 30 fps) different from that of the source (e.g. 24 fps).

AV.io HD web help

The AV.io HD user guide is now available in a convenient, searchable web help format! Look for it on Epiphan's AV.io HD product page (<http://www.epiphan.com/userguides/avio-hd/>).

Limitations and Known Issues

This section includes known issues or limitations that affect functionality or usability and ways that you can work around these limitations.

Affecting all operating systems

- Disconnecting and reconnecting the USB 3.0 cable on an AV.io HD device with an HDMI splitter halts video capture.
 - **Workaround:** When possible, avoid this problem by not using a splitter. If a splitter is necessary, disconnect both the USB 3.0 cable and HDMI splitter from the AV.io HD device, then first reconnect the USB 3.0 cable before reconnecting the HDMI cable between AV.IO HD and the splitter.

Affecting Windows

- Windows 7: The AV.io Config tool sometimes fails to display AV.io HD in the device list despite showing up as an installed device on the computer's Device Manager, therefore occasionally preventing advanced configuration and firmware updates.
 - **Workaround:** Use AV.io Config on a different supported OS to configure AV.io HD. Firmware updates and configuration changes are saved to the device. (Note that the AV.io HD device still functions perfectly with the capture application on the original Windows 7 workstation despite possible issues with the AV.io Config tool.)
 - Windows 7/8.1: The AV.io Config tool may display the AV.io HD device more than once in the device list possibly causing user confusion.
-

- **Workaround:** Simply press the refresh icon to refresh the device list; only one AV.io HD device now displays properly.
- Windows 8.1: Capturing using VLC media player occasionally results in repeated video frames causing overlapping or teared frames to appear during capture (approximately 2% of the time).
 - **Workaround:** Avoid capturing on computers running Windows 8.1 or if that is not possible, use different video capture software.
- Windows 8.1/10 (with an ASMedia ADM1042 A USB 3.0 controller only): Video capture fails when the capture computer recovers from sleep mode, even if capture was stopped prior to sleep mode.
 - **Workaround:** Simply disconnect and re-connect AV.io HD's USB 3.0 cable to the capture computer.
- Windows 10 (64-bit): Capturing video with embedded audio using VLC media player or Windows Camera can result in distorted audio capture.
 - **Workaround:** Capture on a computer with an OS different from Windows 10 (64-bit) or avoid capturing using VLC and Windows Camera.

Affecting Mac

- It is not possible to capture from AV.io HD if a webcam is connected when using VLC media player 2.2.1 on a Mac (this is a VLC-specific bug).
 - **Workaround:** Disconnect the webcam, downgrade to an older version of VLC media player (ex: 2.1) or use a different capture application.

Affecting Ubuntu

- Ubuntu 14.04 LTS: With the exception of the first capture after system reboot, the very first captured frame is always green.
 - **Workaround:** Remove the green frame in post-production editing. If streaming the captured video, begin streaming after the initial green frame as already been captured.
- Ubuntu 14.14: Capturing using VLC media player occasionally results in repeated video frames causing overlapping or teared frames to appear during capture (approximately 2% of the time).
 - **Workaround:** Avoid capturing on computers running Ubuntu 14.14. If that is not possible, use different video capture software.

Affecting Chromebook

- Google Chrome OS v43.0.2357.125 (64 bit): When using Chromebook Apps Clipchamp and WebRTC, AV.io HD is not detected as a valid audio device.
 - **Workaround:** Use Clipchamp and WebRTC for capturing video only, or use a different Chromebook app to capture both video and audio, such as Screencastify or MediaCore Capture.
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Getting started

Welcome and thank you for buying Epiphan Video's AV.io HD!


This guide contains all the information necessary to successfully use AV.io HD to quickly and easily capture live video content without any configuration – simply connect the cables and you're ready to go!




This guide starts off by jumping right into it by showing you how to start capturing video, then we'll take you through how AV.io HD works, followed with some technical reference material, and we'll conclude with a walkthrough of some optional video capture configuration.

Let's get started!

What's In The Box?

Your AV.io HD product contains everything you need to easily capture live video content with minimal setup. Your purchase includes the following:

AV.io HD video grabber		Your video capture device!
DVI-to-VGA cable		Connects a video source with a VGA port to your AV.io HD's DVI port. This cable is included with your AV.io HD purchase.

DVI single link cable (3 feet)		Connects a DVI source to your AV.io HD's DVI port.
HDMI-to-DVI adapter		Connects an HDMI source to your AV.io HD's DVI port
USB 3.0 cable (1 meter)		The USB 3.0 cable connects your AV.io HD video grabber with your computer's USB 3.0 or 2.0 port.

System requirements

System requirements are the barebones technical essentials your computer needs to work with AV.io HD. System requirements to use AV.io HD include:

Video source	Any VESA-compatible VGA, DVI or HDMI source. (AV.io HD cannot capture from an HDCP encrypted source)
Video capture workstation	Any computer (laptop/desktop/other format) with: <ul style="list-style-type: none">• a compatible USB 3.0 host controller for SuperSpeed operation; or,• a USB 2.0 controller
Video capture workstation operating system	Windows 7, Windows 8.1, Windows 10 Mac OS X 10.10 and up Linux distribution with kernel 3.5.0 or higher
Processor frequency	Minimum recommended value: 2.4 GHz
RAM	Minimum recommended value: 4 GB

Technical specifications

Technical specifications for AV.io HD are included in the table below.

Connectors	DVI-I (integrated, digital and analog) USB standard B type
Input	HDMI (audio compatible) VGA and DVI
Audio (HDMI) Input	16-bit and 24-bit PCM encoded audio at 32 kHz, 44.1 kHz and 48 kHz sampling rates
Audio (UAC) output	16-bit 48 kHz stereo audio sampling rates
Color space	YUV 4:2:2
Supported output resolutions (at 15, 30 or 60 fps capture rate)	640×360640×480 848×480..... 960×540 1024×768 1280×720 1280×1024..... 1600×1200 1920×10801920×1200
Capture delay	Near-zero latency, although certain third-party applications may contribute to delay
OS support (32-bit and 64-bit)	Windows 7, Windows 8.1, Windows 10 Mac OS X 10.10 and up Linux distribution with kernel 3.5.0 or higher
USB support	USB 3.0 and 2.0

Hardware

This section describes the physical features of your AV.io HD, including diagrams and hardware feature descriptions.

Topics covered include:

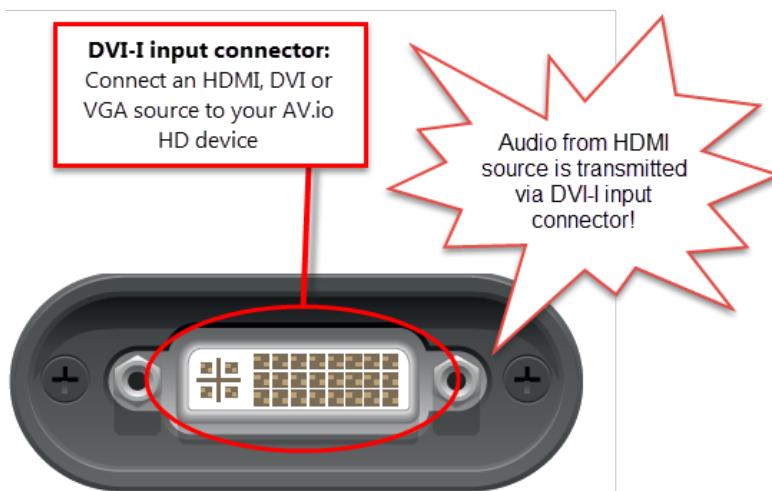
- [Hardware diagrams](#); and,
- [Indicator LED details](#)

Hardware diagrams

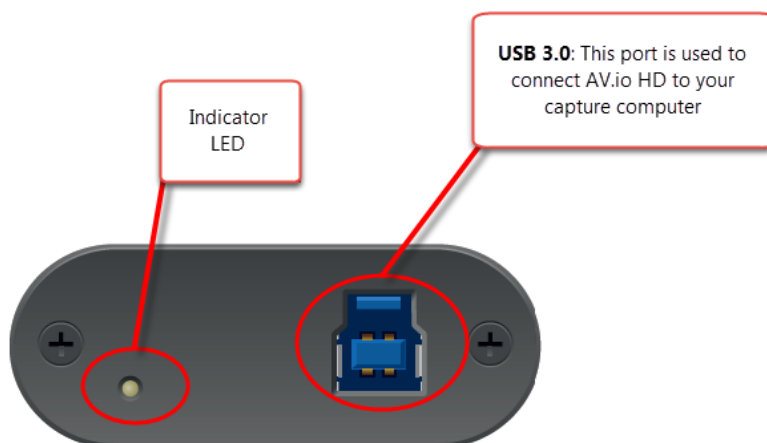
Your AV.io HD device includes two inputs and an indicator light.

Inputs and indicator lights are identified and explained in the top and bottom cap view AV.io HD images below. Indicator light details are explained in the proceeding section.

Top cap view:



Bottom cap view:



Indicator LED details

The color and action of the indicator LED depends on whether you are connected by USB 3.0 or USB 2.0. For maximum performance, always use a USB 3.0 port and the included USB 3.0 cable. Note that frame capture rate will be reduced when connected via USB 2.0.

If you're not sure if your controller is USB 3.0 or USB 2.0, plug AV.io HD into the capture computer and look at the indicator LED. Blue is used for USB 3.0 and green is used for USB 2.0:



A solid blue LED means USB 3.0



A solid green LED means USB 2.0

Connection type/LED color	USB 3.0 connection	USB 2.0 connection
Solid red	<ul style="list-style-type: none"> Firmware update in progress AV.io HD initializing 	<ul style="list-style-type: none"> Firmware update in progress AV.io HD initializing
Blinking red	Adjustment to VGA input in progress	Adjustment to VGA input in progress
Solid green	–	USB 2.0 connection active
Blinking green	-	Video and/or audio transferring successfully
Solid blue	USB 3.0 connection active	–
Blinking blue	Video and/or audio transferring successfully	-

Capture

Setting up your AV.io HD device to capture live video content couldn't be easier!

Before you begin the connection process, you will require:

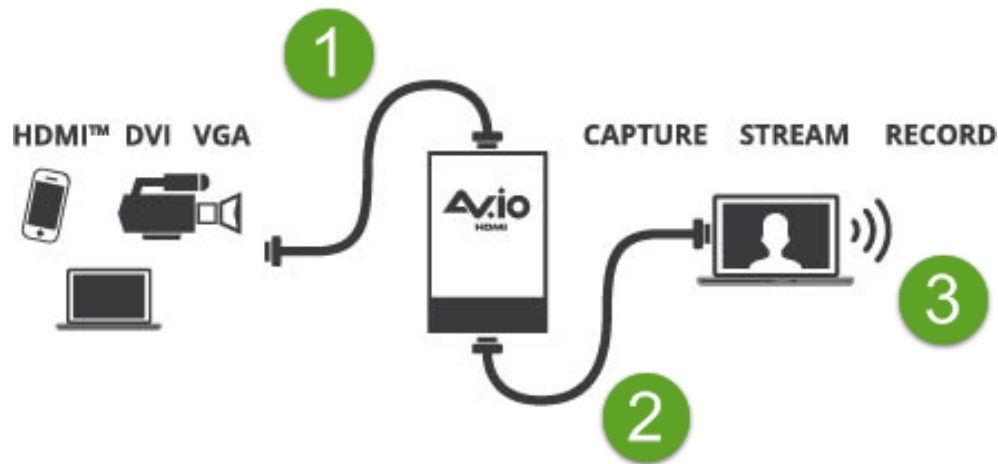
1. An HDMI, DVI or VGA video source
2. Your AV.io HD device
3. A capture computer, laptop or notebook
4. A USB 3.0 cable (included with purchase) to connect to your AV.io HD to your capture computer
5. A DVI cable, VGA to DVI cable, or HDMI adapter (all three included with purchase) to connect your video source to your AV.io HD

Once you have these things ready to go, you can now begin the simple process of hooking up your AV.io HD so you can start capturing!

Set up your AV.io HD for capture

Connecting your AV.io HD to your capture computer is simple and is accomplished in three easy steps.

To connect your AV.io HD for capture:



1. Connect your AV.io HD device to your video source
2. Connect your AV.io HD device to your desktop computer, laptop or notebook
3. Open your favorite third-party application, select AV.io HD from the list of available cameras and start capturing!

And that's it! No drivers to install and no extensive set-up! Just connect the cables and you're ready to go!

How AV.io HD works

Once you're ready to start capturing, you'll need either a built-in or third-party application to capture video content with AV.io HD.

The application will communicate with AV.io HD and negotiate a **frame rate** (frequency at which frames in a video sequence are displayed) and **frame size** (size of a single video frame in pixels). Higher frame rate means smoother video capture while frame size determines the shape of the video output and its degree of crispness.

With the help of AV.io HD, the content from your video source is automatically configured and captured on your computer through your selected application.

Resolutions, capture rates and aspect ratios

The display **resolution** or display modes of a TV, computer monitor or display device is the number of distinct pixels in each dimension that can be displayed.

AV.io HD generates a list of the following possible resolutions for your capture application to select for output display:

640×360	848×480	1024×768	1280×1024	1920×1080
640×480	960×540	1280×720	1600×1200	1920×1200

Captured video content outputs to your application at **15, 30 or 60 frames per second**.

The **aspect ratio** of an image describes the proportional relationship between its pixel width and height.

AV.io HD outputs resolutions in many commonly supported aspects ratios, color-coded according to table of resolutions above and described in the table below:

Aspect Ratio	Common Use
4:3	Standard letterbox TV display and non-widescreen computer displays
16:9	Widescreen (HD) TV displays (1080p, 1080i, 720p etc)
16:10 (8:5)	Widescreen computer displays
5:4	Sometimes used in larger format computer monitors

Automatic image scaling & audio resampling

If your source content is larger or smaller than the frame size chosen by the application, AV.io HD automatically **scales your source** to match the desired frame size! No user configuration required!

AV.io HD also automatically performs **audio resampling**, meaning that no matter the bit depth or frequency of audio through an HDMI audio source, AV.io HD automatically resamples your audio so that your application gets a consistent audio sample rate and bit depth, even if you change the video source!

Third-party applications






AV.io HD uses pre-installed drivers on your OS (called **UVC drivers**) to communicate with a third-party application and capture content. Due to AV.io HD's use of UVC technology, there is no need for driver installation. Just like a webcam, your AV.io HD device is immediately recognized as a capture camera device and can be used to capture content via any UVC-compatible third-party application.

Third-party applications that work with AV.io HD include, but are not limited to:

Zero-install applications (included with your OS)

 <p>Skype (with Windows 8.1)</p>	 <p>Windows Camera app (with Windows 8.1)</p>	 <p>Quicktime (with Mac OS X)</p>
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Popular applications available for download

 <p>Skype</p>	 <p>Wirecast</p>	 <p>Quicktime</p>
 <p>Adobe FMLE</p>	 <p>VLC media player</p>	

Configuration options

Your AV.io HD device is ready to use right out of the box; however, there is support for additional configuration should you need it. Changes can be made to your AV.io HD's default settings and firmware updates can be applied via Epiphan's AV.io Config tool.

Detailed instructions on how to use AV.io Config can be found using the links below:

- [How to change configuration settings using AV.io Config](#)
- [How to update firmware using AV.io Config](#)

The AV.io Config tool allows you to change several settings to make changes to your video capture experience if necessary. Most user's won't need to use this utility for anything other than firmware updates, but advanced users may find these tweaks help them get the most out of their AV.io HD.

These settings include: **input signal resolution**, **aspect ratio preservation** and **performance mode** .

Input signal resolution

When enabled, your AV.io HD adds the exact resolution of your input signal to the list of supported output resolutions. This is the only way to enable 1:1 capture for special frame sizes. However it is important to note that the capture resolution as dictated by the third-party application will override any AV.io HD custom capture settings. Also note that in selecting this mode, any change in input signal (programmatic or by connecting a different input) causes AV.io HD to renegotiate its resolution with the application. This can cause an interruption in the captured stream.

Preserve aspect ratio

When enabled, your AV.io HD preserves the aspect ratio of your input signal by adding black bars to the sides or top and bottom of the frame if the application using the signal requests a frame size with a different aspect ratio. For example, with this option enabled, a 4:3 input signal gets black bars added to the sides of the image when viewed in an application that requests a 16:9 aspect ratio. With this option disabled, the 4:3 image is instead stretched to fit the full 16:9 size.

Performance mode

When enabled, your AV.io HD enters and exits system suspend mode (i.e. sleep) faster by disabling support for the Suspend/U3 USB power state. This means AV.io HD starts working again faster after your computer

wakes from a system suspend state, at the cost of increased power consumption. Disabling this setting is ideal in situations where power consumption needs to be monitored, such as battery preservation in laptops.

Now that you've learned what these settings do, you may want to read-up on how to use the AV.io Config tool to make configuration changes and update firmware:

Configure settings using AV.io Config tool

Epiphan's AV.io Config tool allows a more advanced user the ability to change several settings to their video capture experience. The settings that can be changed include: Re-numerate input signal resolution, aspect ratio preservation and performance mode.

To change the configurable settings with the AV.io Config tool:

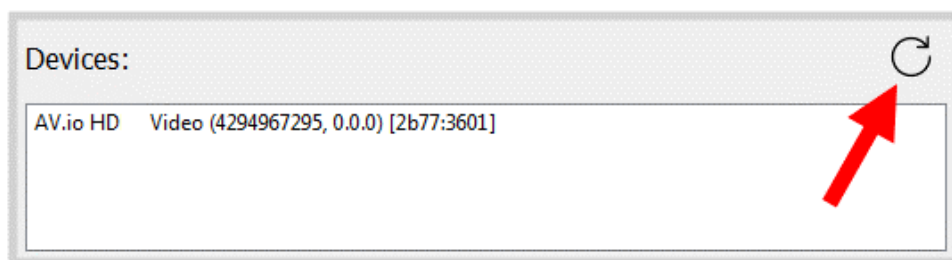
1. Connect your AV.io HD device to your computer, laptop or notebook.
2. Download the AV.io Config tool from the AV.io Drivers section of Epiphan's web site (if you haven't already done so).
<http://www.epiphan.com/support/avio-hd-drivers-documentation/>
3. Open the AV.io Config tool.



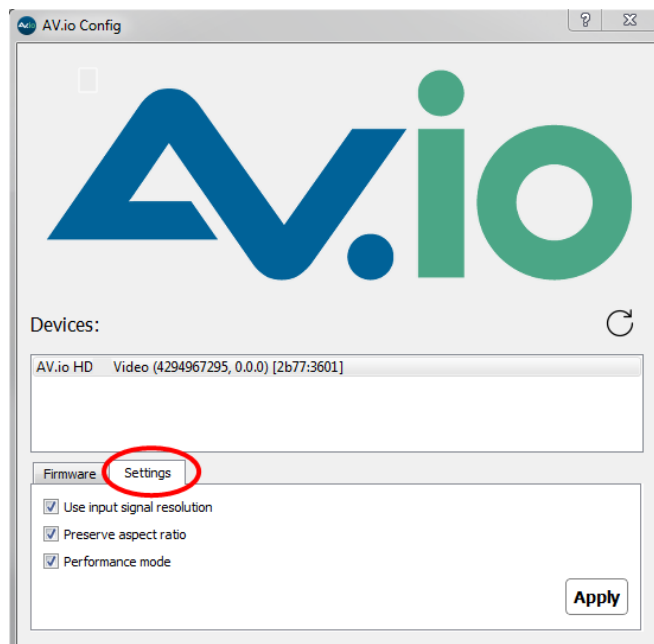
4. Select your AV.io HD device from the list under the Devices heading.



If your AV.io HD device is not displayed, press the Refresh icon to refresh the list of connected devices.



5. Click the **Settings** tab; the settings page appears.



6. Enable or disable the individual settings by clicking each checkbox acco

Update firmware using the AV.io Config tool

From time-to-time Epiphan Video releases firmware updates for our video grabbers. If you register your product and agree to be notified of product updates, you'll receive an email when there is an AV.io HD update available for download.



Attempting to update firmware while running virtual machines will result in firmware upgrade failure.

To update firmware using the AV.io Config tool:

1. Download the firmware update file from the Epiphan website, as described in your firmware update notification email.
2. Connect your AV.io HD device to your computer, laptop or notebook.
3. Download the AV.io Config tool from the AV.io Drivers section of Epiphan's web site (if you haven't already done so).

<http://www.epiphan.com/support/avio-hd-drivers-documentation/>

4. Open the AV.io Config tool.



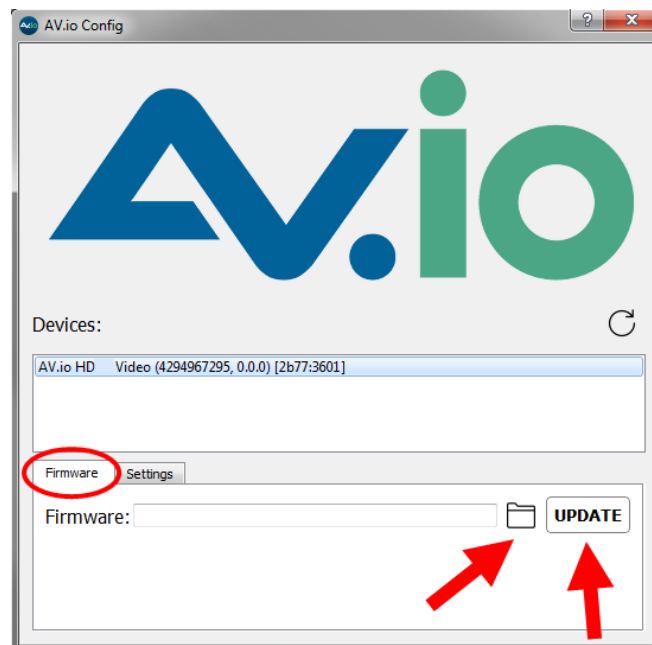
5. Select your AV.io HD device from the list under the Devices heading.



If your AV.io HD device is not displayed, press the Refresh icon to refresh the list of connected devices.



6. Click the **Firmware** tab.

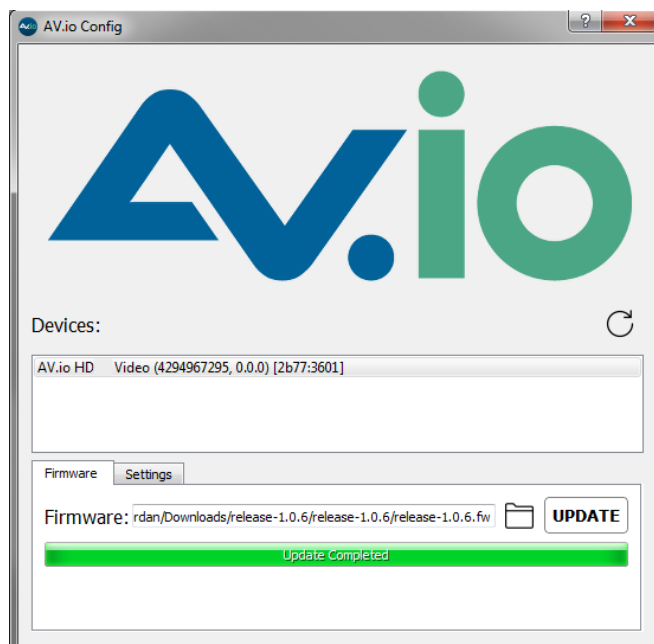


7. Click the **folder icon** to navigate to the saved location of the firmware, and click **Update** to update your AV.io HD device to the selected firmware. An update bar will appear which will display the progress of the update.



Do not disconnect your AV.io HD at any point during the update process! Doing so may cause irrevocable errors and/or permanently damage the device.

8. When the update is finished the progress bar will turn green and display "Update Completed". You may now safely disconnect your AV.io HD if needed.



When updating firmware on a Mac, the “Update Completed” text will not be displayed. The firmware upgrade is complete when the progress bar fills the width of the AV.io Config window and the window contents are no longer greyed out.

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March 28, 2014

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